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HAMILTON-WENTWORTH EMPLOYEE TRAVEL SURVEY

VOLUME 1

SURVEY AND RESULTS

URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

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Planning and Development Department
Hamilton-Wentworth Region

HAMILTON-WENTWORTH

EMPLOYEE

TRAVEL SURVEY

VOLUME 1

Survey and Results

HAMILTON-WENTWORTH REGION
PLANNING AND DEVELOPMENT DEPARTMENT

JUNE, 1981

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1.0 INTRODUCTION

The Regional Planning and Development Department has developed a computer based travel forecasting model capable of estimating future travel associated with planned development for the Region. This model is necessary to determine the transportion impacts of planned development and to provide estimates for future travel on which to base plans for new or improved road and transit facilities.

The model provides important analysis for decision making in the Region and has provided input for the following Transportation Studies:

- The Industrial Perimeter Road
- Burlington St. East Improvements
- The Mountain East-West and North-South Roadway
- The Hamilton Rapid Transit Project
- The Town of Stoney Creek Niagara Escarpment Access Study
- The Town of Dundas-Downtown Transportation Study

The travel forecast model also provides travel demand forecasts for the Intermediate Capacity Transit System Study now being undertaken by the Region. This study will require more detailed estimates of travel demand and the potential for transit riders than any of the previous studies.

Since the majority of transit trips are work related, it is necessary to have up-to-date data on work travel characteristics as input into studies of potential transit usage.

The travel model operates on a computer simulation of personal travel characteristics applied to projections of future development and land use activity. It is therefore important to input to the model, up-to-date information on representative travel behaviour of people in the Region

The model now operates on information on travel behaviour collected in a Home Interview Travel Characteristics Survey conducted in 1974. Because of the time elapsed and related changes in economics, this survey should be updated and or verified. In addition, the information was collected at the home end of the trip maker and does not provide the best data on work trip characteristics.

On May 6, 1980, Regional Council directed staff to undertake an Employment End Travel Characteristics Survey in 1980, and that the Provincial Ministry of Transportation and Communications be requested to subsidize seventy-five percent of the study costs estimated to total $15,000. (See memorandum to Planning and Development Committee and Regional Council Resolution, Appendix Item 1). Funding for the study was approved by the Ministry of Transportation and Communications.

As a result of unexpected costs, the original budget was exceeded. The reasons for the over run were: unexpected travel costs, the need to mail some questionnaires, higher printing costs and a work load heavier than expected. A budget extension of $4,500 (75% funding by M.T.C.) was requested and approved as outlined in the Appendix Items 2 and 3. A copy of the project budget actual to December 31, 1980, and expected for 1981 are included as Item 4 in the Appendix.

This report is Volume one (1) associated with this study. It details the methodologies employed in sample selection and the survey process as well as coding and editing procedures. This document will also report on the response rates achieved, the inherent bias and the resultant reliability associated with the results.

A detailed analysis of the questionnaires will be reported in Volume two (2) when computer sorting of the responses is complete. This information will then be used in the Region's travel forecast model.

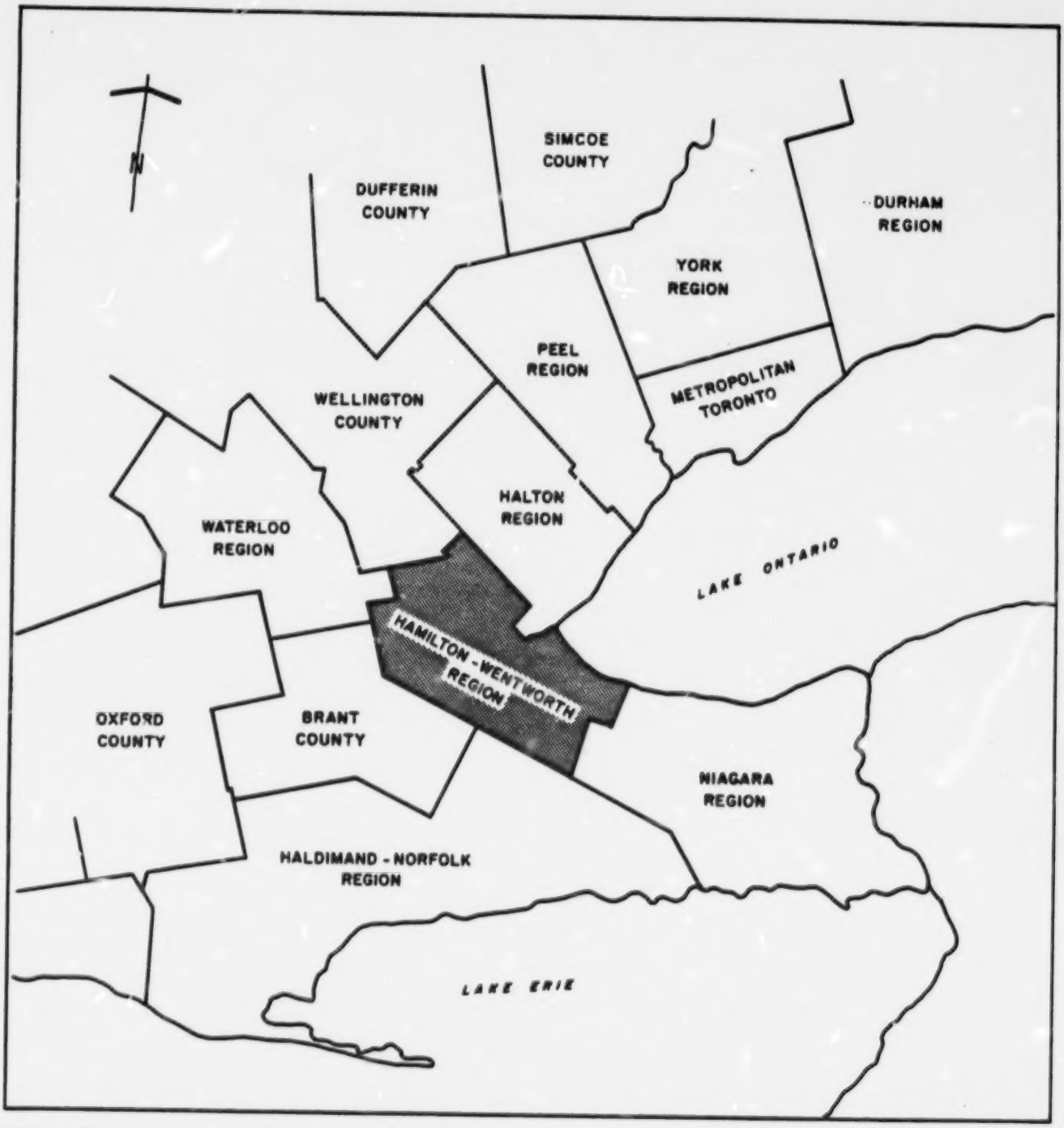
1.1 Purpose

This survey expands our understanding of work trip travel characteristics in Hamilton-Wentworth and improves travel forecasting utilizing the Regional travel forecast model.

The Home Interview Travel Characteristics Survey (1974) forms the main part of the data base which fuels the travel forecast model, however, because this survey was administered at the home, limited information exists on the important work trip. By carrying out a survey at the place of work, certain information gaps can be filled. Specifically, the reliability of the Regional travel forecast model will be improved in the following areas:

1. Improved trip generation estimates for the place of work will indicate travel patterns of employees rather than the travel patterns of the labour force as was collected in the 1974 Home Interview Survey;

2. Better modal split estimates for work trips will improve the sensitivity of mode choice to changing economics and policy decisions rather than relying on estimates of feasible transit usage as is done now;



MAP NO. 1

HAMILTON - WENTWORTH LOCATION

EMPLOYEE TRAVEL SURVEY 1980
REGIONAL PLANNING DIVISION
PLANNING & DEVELOPMENT DEPARTMENT
HAMILTON-WENTWORTH REGION

3. Trip length frequencies will provide some time series data compatible with the 1974 Survey and will improve the reliability of trip length frequency in the forecasting of travel patterns;

4. More reliable estimates of true work trip origins and destinations will be achieved and will reduce the dependance of trip distribution on trip length frequencies;

5. Up-to-date information about the composition of peak hour travel and the impact of a high percentage of shift work in the Hamilton area will improve the model sensitivity to future trends; and

6. Other data related to the amount of non-home based travel and public attitudes towards change due to social and economic conditions will facilitate the development of Regional policies in the areas of public transit, car and van pooling and parking.

The incorporation of this information into the transportation model will result in a more refined forecasting tool. In addition to this application, this information may prove useful in other areas including transit improvements and van-pooling encouragement programs.

1.2 Approach

The survey was designed during the Spring and Summer of 1980 and carried out between September 1980, and January 1981.

The survey took the form of a questionnaire which was distributed to employees in the Region via their employers. The questionnaire included eleven (11) questions regarding the time and mode of travel to and from work, place of residence, parking, sex, occupation and attitude towards modal types. It was intended that the employer retrieve the questionnaires and return them to the Region for processing. Several exceptions to this procedure were necessary and are detailed in this report.

Not all employees in the Region were approached. A sample of employers of different size, type and location was selected. This sample supplies statistically representative information on the Region's work trip characteristics.

When the questionnaires were distributed to employers, a number of questions were asked regarding the size and nature of the firm. This information was recorded on a separate "employer questionnaire".

The experience of several similar surveys was drawn upon with regard to sample selection and survey methodology. An application of the place of work employee transportation survey first took place in Washington D.C. and was documented in an article entitled "Workplace Interviews as an Efficient Source of Travel Survey Data" by R. T. Dunphy which appeared in the Transportation Research Record 701-1979. The survey approach was also recognized as having potential use in a report to the Ministry of Transportation and Communications by Acres Consulting Services entitled "Toronto Area Transportation Data Study" 1979.

The experience of the Region of Peel in a similar survey was most useful as was design work being done on a survey for Metropolitan Toronto.

The following details the sample selection and survey process.

2.0 SURVEY SAMPLE

The survey sample selection process required a number of steps including the establishment of a universe, the sample design which involves the approach as well as assumptions made, and the actual selection of the sample. In some cases where large firms were selected for the survey, it was necessary to distribute questionnaires to only a portion of the firms' employees. All of the above methodologies are detailed below.

2.1 Universe Establishment

In order to select a statistically sound sample, it is necessary to understand the extent and characteristics of the group or body you wish to sample. The first step of sample design is therefore the establishment of the universe.

In this case, the universe is comprised of all employers in the Region of Hamilton-Wentworth (see Map No. 1). This includes firms with as few as one employee up to Stelco with approximately 15,000 employees in the Region.

At one time, the inclusion of the adjacent municipality of Burlington in the study area was considered because of the significant travel interaction between Burlington and the Region. The possibility was rejected after discussion in house and with Region of Halton staff, for the following reasons:

(a) The technical and political difficulties of an inter regional survey;

(b) The existence of a recent roadside survey at the Regional Boundary (Origin Destination Survey 1976) which provided information on inter municipal traffic flows; and

(c) The additional personnel and dollar cost associated with an expanded survey.

The names and locations of employers is required information as part of the universe. Additional information required included the number of employees in each firm and the type of industry. It has been found that employees in firms with different size and type characteristics exhibit different travel habits. This information is required for sample design.

The Region did not have an existing comprehensive inventory of employers. It was therefore necessary to investigate external sources of employers as well as partial internal sources. Two universes from different sources were obtained for comparison purposes.

One universe was constructed by Planning and Development staff from a number of partial sources as follows:

(a) 1971 City of Hamilton Employment Survey,
(b) 1975 Regional Business Survey,
(c) 1980 Economic Development Department Employer listings,
(d) 1979 Vernons Directory, and
(e) 1980 Telephone book listings.

Used individually, each of the above sources has its drawbacks, but combined, they produce a comprehensive inventory. The inventory contains information on employer name, location (by TARMS zone), employer type, number of employees and often a company contact person. This data was keypunched and a master list prepared.

The second universe source used the 1975 Regional Business Survey, the 1971 City of Hamilton Employment Survey and Telephone listings. This conglomerate universe was verified by Central Statistical Services of the Ministry of Treasury and Economics using the Statistics Canada Business Registry.

These two universes were compared in great detail. It was concluded that the best universe for firms with twenty (20) employees or more was the conglomerate universe constructed by staff while the best small firm universe (19 employees or less) was the conglomerate universe verified with the Statistics Canada Business Registry. It was decided to use these two universes as the basis of sample selection.

Both universes contain errors or omissions, and will therefore be referred to as the large employer perceived universe and the small employer perceived universe. The exact magnitude of error could not be determined, however, the error was estimated when the actual errors in the selected sample became apparent. These errors will be presented in Section 5.0 of this report.

TABLE 1

CATEGORIZATION OF MACRO ZONES FOR PRIORITY APPROACH

1. farm & related
2. farm & related
3. farm & related
4. suburban & related
5. farm & related
6. suburban & related
7. unique-Dundas core area
8. suburban & related
9. farm & related
10. farm & related
11. farm & related
12. farm & related
13. mountain residential
14. unique-fruit farms
15. urban & related
16. urban & related
17. urban & related
18. unique-core areas
19. urban & related
20. unique-industrial core
21. unique-urban fringe (dense)
22. urban & related
23. urban & related
24. urban & related
25. mountain residential
26. unique-mountain core area
27. mountain residential
28. mountain residential
29. mountain residential
30. unique-mountain industrial

Employee Travel Survey 1980
Regional Planning Division
Planning and Development Department
Region of Hamilton-Wentworth

2.2 Priority Approach

For the purpose of this study the Region was divided into thirty (30) macro traffic zones (see Map No.2). These zones have been used in the past for transportation planning and also correspond to units which are used for land use planning in the Region.

It was determined that to survey all of the macro traffic zones was impossible given time and budgetary constraints.

This was primarily due to the fact that in many macro zones a 100% sample would be necessary to achieve a statistically reliable stratified cluster sample.

Further, it was determined that although some zones had a unique employer profile, many zones were similar in character. The unique zones were identified and all of these zones were surveyed. These zones contain, by far, the greatest concentration of employers and employment in the Region. The other macro zones were classified into four (4) categories, one zone from each of these categories was surveyed.

The results obtained from the surveyed macro zone in each category were applied to the other zones in the category on a firm type-size basis using our knowledge of the universe in each of the unsurveyed zones. This interpolation assumes similar travel characteristics of individuals employed in similar size-type firms as well as similar zonal characteristics.

The characteristics considered when categorizing zones were; existing and future land use, geographical position in the Region, sewer and water servicing and the level of transportation accessibility. As may be expected, the assignment of macro zones to categories is to a certain extent subjective.

The macro zone groups are:

(a) Typical Rural Farm and Related - Zones located in areas where the principal land use is open space or agriculture (jobs may include farming, farm implement repairs, extractive related as in pits and quarries, small businesses etc.);

(b) Typical Surburban Community - Zones in areas of low density residential development intermixed with low density employment (jobs may include some manufacturing, retail and service etc.);

(c) Typical Urban Community - Zones in areas of medium density residential development intermixed with some industry (jobs include manufacturing and wholesale, service and retail etc.); and

TABLE 2

MACRO ZONE CATEGORY GROUPS

	TYPE	MACRO ZONE
A.	Unique Zones	7, 14, 18, 20, 21, 26, 30
B.	Urban and Related Zones	15, 16, 17, 19, 22, 23, 24
C.	Mountain Residential	13, 25, 27, 28, 29
D.	Suburban and related	4, 8
E.	Rural Farm and Related	1, 2, 3, 5, 6, 9, 10, 11

Employee Travel Survey 1980
Regional Planning Division
Planning and Development Department
Region of Hamilton-Wentworth

TABLE 3

PRIORITY LISTING OF
SELECTED MACRO ZONES

PRIORITY	MACRO ZONE	TYPE
1	26	
2	20	
3	18	
4	21	Special
5	7	
6	14	
7	30	
8	22	Urban
9	25	Mountain
10	8	Suburban
11	10	Rural Farm

Employee Travel Survey 1980
Regional Planning Division
Planning and Development Department
Region of Hamilton-Wentworth

(d) Typical Mountain Community - Zones in areas of predominantly residential development on the escarpment within the City of Hamilton. This group is similar to the Surburban zones except that there is no physical separation from continuous urban development from the central area and almost all development is based on full services.

Table 1 indicates which zones are unique and which zones have been categorized. Table 2 groups the zones into categories.

The unique or special zones were surveyed first. One typical zone from each category was selected for surveying. In total eleven (11) macro zones out of thirty (30) were selected for surveying. Table 3 shows the survey priority assigned to each of the selected zones. Map 3 highlights the selected macro zones.

2.3 Sample Selection

As outlined in Section 2.1, two different universes were used. Therefore two different sample designs were necessary.

The large employer perceived universe (20 or more employees) was divided into groups by number of employees and type of activity. The size groups used were:

Size Group	Number of Employees
2	20 - 99
3	100 -299
4	300 -499
5	500 +

The employers were originally divided into six (6) type groups. This was later reduced to four (4) groups when the Manufacturing, Construction and Wholesale groups were combined. The four (4) groups used were:

Type Number	Activity	Standard Industrial Classification
1.	Manufacturing, Construction, Wholesale	101-499, 520-529, 600-629 999,000
2.	Retail	630 -699
3	Service.	500-519, 530-599, 700-991
4.	Primary	001-009

The basis of this categorization is the generally accepted belief that firms of different size and type often generate different employee travel characteristics.

TABLE 4

LARGE EMPLOYER PERCEIVED UNIVERSE

EMPLOYER TYPE

NUMBER OF EMPLOYEES	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20 - 99	327	135	534	2	998
100 - 299	91	21	59	3	174
300 - 499	16	1	8	0	25
500+	26	2	15	0	43
TOTAL	460	159	616	5	

TOTAL LARGE EMPLOYER PERCEIVED UNIVERSE 1,240

Employee Travel Survey 1980
Regional Planning Division
Planning and Development Department
Region of Hamilton-Wentworth

TABLE 5

LARGE EMPLOYER PERCEIVED UNIVERSE

FOR SELECTED MACRO ZONES (11)

EMPLOYER TYPE

NUMBER OF EMPLOYEES	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20 - 99	198	107	395	0	700
100 - 299	72	16	49	1	138
300 - 499	10	1	7	0	18
500+	21	2	14	0	37
TOTAL	301	126	465	1	

LARGE EMPLOYER PERCEIVED UNIVERSE FOR SELECTED MACRO ZONES 893

Employee Travel Survey 1980
Regional Planning Division
Planning and Development Department
Region of Hamilton-Wentworth

TABLE 6

THEORETICAL LARGE EMPLOYER SAMPLE

EMPLOYER TYPE

NUMBER OF EMPLOYEES	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20 - 99	76	57	83	0	216
100 - 299	36	16	32	1	84
300 - 499	5	1	7	0	13
500+	7	2	14	0	23
TOTAL	124	76	136	1	

TOTAL THEORETICAL LARGE EMPLOYER SAMPLE 336

Employee Travel Survey 1980
Regional Planning Division
Planning and Development Department
Region of Hamilton-Wentworth

The type categories correspond to the categories used in the 1971 City of Hamilton employee survey and to the categories used in Hamilton-Wentworth's Travel Forecast Model.

The universe for Hamilton-Wentworth, as determined in 2.1 above, is broken down into a size-type matrix as shown in Table 4. The universe for eleven (11) macro zones which were selected for surveying is shown in Table 5 as a size-type matrix.

All firms with greater than 300 employees (e.g. size categories 4 and 5)were selected for survey. A size-type matrix was assembled for each of the eleven (11) macro zones to be sampled. Four employer type cells for size groups two (2) and three (3) were examined individually (total eight cells per macro zone). Where ten (10) employers or less existed in a cell, all the employers were selected for surveying. In cells where more than ten (10) employers occurred, each employer was assigned a sequence number. Ten (10) sequence numbers were then selected using a random number table. It was assumed that this random cluster sample technique would ensure a representative sample while keeping costs within budget. The large firm theoretical sample by size and type is shown on Table 6.

At this point all selected employers were telephoned. This call verified that the firm was still in existence in the same macro zone and it established the name of a contact person in the firm.

If an employer could not be located or had moved to another macro zone, a replacement procedure was initiated. Employer size and type were not verified at this time for fear of turning off the employer at this preliminary contact. Size and type were verified during the employer interview which is dealt with in Section 3.6.4. If the employer could not be located or had moved to another macro zone, the employer size-type matrix cell was examined. If the original sample took all employers in the cell (e.g.ten or less originally existed) then the employer could not be replaced. If the cell contained more than ten employers, then the unsuitable employer was removed and the next employer included in the survey, as indicated by the next appropriate random number. If the unsuitable employer had simply moved to another surveyed macro zone, then his name was added to the appropriate size-type matrix cell in the new zone. It was, therefore, possible for the employer to be selected again. This replacement procedure was utilized a number of times. The large firm sample was thus selected and verified.

The second universe consisted of small firm employers (with 19 employees or less). The sample was selected as detailed in Section 2.1 with the assistance of Central Statistical Services of the Ministry of Treasury and Economics. The small firm universe includes approximately 7,880 employers. The sample process involved a random start periodic selection of approximately 125 small firms. These firms were then verified through the use of telephone directory. A number of firms were eliminated through this verification process.

The names of 84 employers were delivered to the Region. These firms constituted the small employer theoretical sample. These firms were distributed across the Region and not restricted to the eleven selected macro zones as was the large firm sample.

These employers were also contacted by telephone to verify suitability. Fifty-six (56) employers could be verified in this manner. No replacement procedure existed for employers which were eliminated.

For various reasons, only 36 of the 56 firms actually participated in the survey. When the standard confidence test was performed on this response rate, a confidence level of less than 80% was achieved. This confidence level was deemed not suitable. A second group of 125 small firm employers was selected using the same technique cited above. These employers were verified, then questionnaires were circulated to them by mail. Forty-two (42) employers in this second small firm sample responded, bringing the total small firm actual sample to 78 which is a more suitable sample size.

The large employer theoretical sample and the small employer theoretical sample were geo-coded with a four digit code. Large employers were divided into macro zones (the first two digits) and the last two digits were sequence numbers. The first selection of small employers were assigned a 00 code plus a two digit sequence number. The second selection of small employers were assigned a 99 code plus a two digit seqence number .A list of sample employers and assigned codes exists for both large and small firms in the Appendix, Items 5 and 6.

2.4 Large Firm Sub-samples

In a number of cases a sample within selected employers was carried out. These sub-samples were necessary because of the large size of some firms. In most cases firms or agencies with more than 1000 employees were sub-sampled. In total eleven (11) firms were sub-sampled.

The techniques employed varied from firm to firm according to the circumstances. The types of sub-samples are outlined below.

In some cases what was deemed to be a typical department within the firm was selected and surveyed. Usually all three work shifts involved with the department were surveyed. Distribution was achieved through pay envelopes or via foremen/supervisors. Firms which were sampled this way were Firestone, Westinghouse, National Steel Car, and Procter and Gamble.

A variation of the first technique was carried out in four large hospitals. Hospitals contained a large number of departments (up to 60) with a variety of sizes. For sampling, Hospital departments were divided into administration, nursing, technical-professional and support staff groups. Representative departments from each group were selected for surveying. Hospitals sampled in this way were St. Joseph's, General, Henderson and the Chedoke Hospital branch of Chedoke-McMaster. At Hamilton Psychiatric Hospital a 100% sample was administered.

At one firm, International Harvester, a random distribution of questionnaires at entrance gates was carried out by security guards. This approach was taken after alternative methods were deemed impossible.

At Stelco, Hamilton-Wentworth's largest employer, a unique sample was designed. Four Stelco employment locations existed in the selected macro zones; Stelco administrative building, Hilton Works, Frost Works and Parkdale Works. An eight (8) percent sample in each survey location was computer selected by Stelco staff using a random start periodic sample technique. Addresses of selected employees were printed on labels and delivered to the Planning Department. Distribution details can be found in section 3.7

At Dofasco a random sample of employees was selected using Dofasco computer capabilities.

A list of all sub-sample employers along with number of employees and sample size can be found in the Appendix, Item 7.

3.0 SURVEY PROCESS

3.1 Questionnaire Design

After the travel survey objectives were defined, information needs were specified. These needs were put into question form and laid out on the first of a series of questionnaire mock-ups. The questionnaire design philosophy followed was that of the "Total Design Method" as detailed by D. A. Dillman in Mail and Telephone Surveys, John Wiley and Sons, 1978.A series of trade-offs were made between the number and extent of questions being asked and the format requirements of the questionnaire philosophy. Questions regarding parking cost, hours worked and type of accommodation were not included in order that a more attractive and spacious questionnaire could be designed.

The questionnaire was intended to be completely self-explanatory, therefore the first page contained an explanation of the need for such a survey and a request to participate (see appendix Item 8). A space for comments and a telephone number for inquiries was included on the back cover.

An examination of the "language spoken" profile for Hamilton-Wentworth was carried out. The language most often spoken in the home was as follows:

Language	Percent of Population
English	87.7
Italian	4.45
German	1.1
Polish	1.04
Ukranian	.86
Other and Unknown	4.85

Source - Statistics Canada, 1971

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The analysis indicated that in addition to an English version of the questionnaire, an Italian version would be useful. An Italian version was prepared by Planning and Development Department staff (Appendix Item 9). Design eliminated the need to interpret the Italian Questionnaire. It was decided by staff that if it became necessary versions of the questionnaire would be prepared in other languages. This did not become necessary.

Some 50,000 copies of the English language version were printed on light yellow paper with brown ink.

3.2 Support Material

In addition to the information required from the employee, certain information was required from the employer. This information was put in questionnaire form and was administered by Regional staff. A copy of the questionnaire is included in the Appendix, Item 10.

Small posters promoting the survey were prepared in English and Italian. These posters were posted by the employer in prominent spots at the place of work. The posters were printed on colourful eye-catching paper. Both posters are contained in the Appendix, Items 11 and 12.

Two letters were prepared for the signature of the Regional Chairman. The first letter was a letter of introduction addressed to the principal contact person. The second letter was a letter of thanks to the employer for participating in the survey. Both letters can be found in the Appendix, Items 13 and 14.

3.3 Pretests

Two levels of employee questionnaire pretesting were carried out. Both provided valuable feedback on the questionnaire and/or administration process.

The first test was an in-house circulation of a draft questionnaire to the Planning and Development Department, "Century 21" offices. The pretest involved approximately 25 individuals. The respondents were asked not only to fill out the questionnaire but to make comments regarding presentation and wording. A number of wording changes were made as a result of this pretest. Better explanations as to why certain questions were being asked were also incorporated into the questionnaire.

The second level of pretest involved a full application of the survey techinques to two (2) different Hamilton employers. The employers were a large automobile dealership and a medium sized steel-related production company. In both cases, the basic administration procedure outlined in Section 3.5 below was followed. The response rate at the automobile dealership was good, whereas the production company response rate was poor.

After discussions with management and union personnel, a number of problems were identified. It was discovered that especially in union shops the questionnaire is viewed very suspiciously. Great care must be taken in explaining the purpose of the questionnaire to both management and union personnel ensuring that all possible reasons for mistrust are eliminated.

Originally an employer code number was included on the questionnaire. Some respondents viewed this as a violation of assured confidentiality. The code number was removed. Further, it was discovered that some respondents thought postal codes were unique to addresses and therefore could be used to trace individuals. The postal code question was also removed. The phrase "This information will be treated as confidential" was included before the home address question.

The importance of the employer interview became more clear as a result of the pretest. Not only must the questions and the related rationale be fully explained, but an attempt to instill in the employer some enthusiasm for the project must be made.

The single most important pretest discovery was the need to contact union personnel regarding the survey. In many union shops, employees have much more faith in the union hierarchy than they do in company management . The inclusion of union personnel in the survey process is even more important in a city such as Hamilton which has a significant trade union presence. The approach to union contact is explained in section 3.4.

3.4 Public Relations

Two important aspects of the survey process are outlined here, media promotion and union contact.

A thirty (30) second "public service spot" was released for airing to five (5) local radio stations. The script and a list of the stations involved can be found in the Appendix, Items 15 and 16. Call backs were made to the radio stations to ensure that the "spot" was aired throughout the survey. The "spot" was also released to the local public service cable T.V. station (Cablevision, Cable station 4) and CHCH - TV (Channel 11).

The project was announced to press representatives at a press conference held by the Regional Chairman. This resulted in two articles which appeared in Hamilton's daily newspaper "The Spectator."

The union contact phase of the study began with the assembly of a list of the selected sample employees with union representation. Major unions such as the United Steelworkers, United Rubber Workers, C.U.P.E. and the Teamsters were contacted in person. Other unions were contacted in writing (see list in Appendix, Item 17). In all of these cases union co-ordinators or executives were requested to send a letter of explanation and encouragement to representatives of Union Locals in sampled firms. Examples of these letters are included in the Appendix, Items 18 and 19.

When staff interviewed employers, the union contact procedure and rationale were explained. Union representatives (Local president and secretary or shop stewards) at that particular employment location were then contacted. They were encouraged to post the letter of encouragement from union headquarters and/or their own letter on union bulletin boards.

Union personnel were very helpful and enthusiastic regarding this project. In several cases announcements were placed in union newsletters.

Only unions or associations listed in the Appendix were contacted before the distribution of the employee questionnaire. In many cases representatives of smaller unions were contacted when the employer interview was conducted.

3.5 Administering The Questionnaires

Employer contacts were divided into seven (7) basic steps. These steps are outlined in detail below. Because over 300 employers were involved in the survey and because so many steps were involved in administering of the questionnaire, a master check list was used to keep track of the contact sequence for each individual employer. It was the intention of this check list to minimize sequence over sights. The timing of contacts and the time gap between steps, were also specified (See flow chart in Appendix, Item 20).

In order to insure that the interviewers understood all steps, had a feel for transportation planning techniques and problems in Hamilton-Wentworth, and had an appreciation for the study objectives a "Training Seminar" was held for all participants. The program for this session is included in the Appendix, Item 21. Weekly meetings were held with the interviewers in order to identify problems early and learn from each others' experience.

3.5.1 Preliminary Contact

As mentioned earlier, the first employer contact was by telephone and was designed to verify the selected sample and to establish a contact person in the firm.

The contact person's telephone number, title and address were checked during the same conversation. A telephone script for this contact phase can be found in the Appendix, Item 22. If at this point the firm was found unsuitable for sample, it was, if possible, replaced and, if appropriate, placed in another macro zone size-type matrix cell.

3.5.2 Chairman's Letter

The letter of introduction from the Regional Chairman was then sent to the contact person in the firm. The letter mentioned that a Regional staff person would telephone the contact person in the near future.

During the period of expected mail interruptions in the fall of 1980, letters were hand delivered so as to not unduly delay the contact sequence. An appropriate number of letters were mailed/hand delivered each week in order that staff could indeed telephone the contact persons "in the near future". A copy of the Chairman's introduction letter is contained in the Appendix, Item 13.

3.5.3 Second Telephone Contact

When an appropriate time had passed allowing for delivery and reading of the Chairman's letter (about one week), the contact person was called. This contact was designed to ensure the letter had been received and to arrange for an interview at the convenience of the employer. Occasionally, it took weeks before the employer contact person was available to meet with Regional staff.

In some cases, employers did not wish to participate in the survey. If this was the situation, then the employer was replaced, if possible. At the height of the interview phase, staff were peaking at 20 interviews per week each. A script for this second telephone call is included in the Appendix, Item 23.

3.5.4 Employer Interview

The employer interview was the most critical stage of the process, a successful interview could be directly correlated to survey success. Tact, diplomacy and salesmanship were the qualities the interviewers aspired to during this phase. Interviewers had to adapt their approach to the particular employer. One interview with a busy gas bar manager was conducted in about five minutes, literally between fill ups. In other cases, an interested employer took up to an hour. Most interviews took 20 - 30 minutes.

The objectives of the interview were: to explain the purpose of the survey, to conduct the employer interview, to explain the employee questionnaire and to arrange an appropriate distribution technique.

The first step was to ask the employer if he had received the Chairman's letter. Often the letter had been misplaced or had not been read. Interviewers always carried extra copies. This introduction was a natural lead-in to the purpose of the survey.

Interviewers tried to relate the benefits of such a survey to the transportation needs of the employer/employees of the firm.

The second step was to fill out the employer questionnaire. This was done by the interviewer. A copy of the employer questionnaire as well as interviewer instructions are included in the Appendix, Items 10 and 24. If the firm was unionized, the importance of union contact was explained. Any preliminary union contact was mentioned and appropriate union contact procedures discussed.

The employee questionnaire was then given to the employer and explained. The need for the home address, sex and occupation questions was fully explained. Confidentiality was stressed. Distribution techniques for the questionnaire were discussed. Often the employer knew the best method from experience in distributing other items to employees. Generally, it was found that in large firms, distribution with pay envelopes was easiest while distribution by hand was best with small firms.

Two concerns were stressed: the need for a high response rate and the requirement that each and every employee get one questionnaire.

The employer's collection method was discussed, the need to "promote" the survey was mentioned, and the date of distribution was specified. Any firm anomalies, such as split locations, part time employment or irregular shift work, were identified and dealt with.

The employer was shown the promotion poster and asked if it could be posted, preferably with his signature and the signature of a visable union representative in order to signify endorsement. The appropriate number of questionnaires and posters were left with the employer. On quite a number of occasions, the employer prepared, with Regional staff help, a letter to accompany the questionnaire. An example of such a letter appears in the Appendix, Item 25.

The availability of an Italian poster and questionnaire were raised, if appropriate. In some cases, the employer was able to include mention of the survey in a company or staff newsletter. The employer was then thanked for his help. Step by step interview instructions for staff were prepared and appear in the Appendix, Item 26.

3.5.5 Employer Call Backs

Several days after the agreed distribution date, the employer was telephoned again. He/she was requested to press for further returns of the questionnaire from his employees. A questionnaire pick-up date was arranged.

In some cases, the employer was not able to distribute the questionnaire as promised. In this case, a new distribution date was set. On occasion, distribution dates were missed repeatedly until finally the employer was replaced or eliminated from the sample.

3.5.6 Thank You Letter

After the questionnaires were picked up, a letter of thanks under the Chairman's signature was sent to the employer's attention. A copy of this letter can be found in the Appendix, Item 14.

3.6 Special Cases

A number of employers were surveyed in a different manner. These anomalies can be divided into very large firms and small firms and are dealt with below.

Large firm sample procedures are detailed in Section 2.4. Aside from the sample procedures, a different administration process was followed with some firms.

Because the sample selected for Stelco was spread among four locations, three shifts and many departments, it was decided to circulate the questionnaire to employees by mail. The envelope sent to employees included a questionnaire, stamped return envelope and a letter of explanation signed by the Stelco officer in charge of employee relations at the employees' work place. The return envelopes were color coded for each of the four employment locations in order that a macro zone code could be assigned.

At Dofasco, the questionnaires were distributed as part of an in-house circulation to specifically selected employees. Accompanying the questionnaire was a stamped, Region-addressed envelope.

All other large firms were dealt with as outlined in Section 3.5.

Originally, when surveying small firms (less than 20 employees) the standard procedure was used. Then, in order to save time, a large return envelope was left with the employer in order that the second visit, the pickup, could be eliminated. Eventually, the interview visit was also eliminated. The interview was conducted by telephone, then the appropriate number of questionnaires was mailed to the employer along with a return envelope. This approach was followed up by a number of return phone calls. This letter approach was used with the majority of small firms.

4.0 CODING - EDITING

The volume of information output from the survey required that analysis be computerized. Before analysis could begin it was necessary to code/edit and keypunch the questionnaires.

4.1 Coding-Editing

The employee questionnaire was, to a large extent, self coding. In other words, the questions did not have to be transferred to a separate coding sheet before keypunching could proceed. However, certain information had to be interpreted on the questionnaire. A code number for the employer had to be added as well as the T.A.R.M.S. code for the home address of the employee. The questionnaires also had to be checked for obvious inconsistencies which would invalidate the responses. Detailed instructions regarding the coding/editing process can be found in the Appendix, Item 27.

When the coding of a firm's questionnaires was complete, they were filed ready for transport for keypunching. Any written comments on the questionnaires were recorded separately and were compiled by hand. When answers in the "other" column of questions 4, 5, 8 and 11 could not be placed in another category, the response was also recorded separately for hand compilation.

4.2 Keypunching

Keypunching of the edited questionnaires was carried out by the Ministry of Transportation and Communications. Detailed keypunch operator instructions can be found in the Appendix, Item 28.

5.0 RESULTS AND ANALYSIS

The results and analysis which occur here refer strictly to the survey phase. Analysis of the actual responses to the questions themselves will occur as part of the second report of this project. This section is divided into four parts; Response Rates, Type-Size Analysis, Confidence and Bias Test and Sample Design Reliability.

5.1 Response Rates

The response rates are divided into four categories; large firms, small firms, large firm employee responses and small firm employee responses.

5.1.1 Large Firms

The large firm perceived universe (all of Hamilton-Wentworth Region) is composed of 1,240 firms. The size-type characteristics of these large firms (20 or more employees) are detailed in Table 4. Eleven (11) of the Region's thirty (30) macro zones were selected for surveying (see Map 3).

In these eleven (11) zones, the universe contains 893 large firms. The size-type characteristics of these firms can be found in Table 5.

In the selected macro zones, a total of 335 firms were selected for sampling according to the methodology outlined in Section 2.3. The size-type characterictics of these 335 firms are outlined on Table 6.

Some 254 large firms actually participated out of the 336 that were selected. Approximately 76 percent of the selected large firms participated. The size-type characteristics of the firms which participated are detailed in Table 7.

5.1.2 Small Firms

The small firm perceived universe (employers with less than 20 employees) was composed of 7,880 firms. The type characteristics of this universe are detailed in Table 8.

As outlined in Section 2.3, a random start systematic sample technique yielded a semi-verified sample of firms. This sample was prepared by Central Statistical Services of the Ministry of Treasury and Economics. A telephone verification of these 83 firms reduced the number to 56.

TABLE 7

ACTUAL LARGE EMPLOYER SAMPLE

NUMBER OF EMPLOYEES	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20 - 99	52	39	77	0	168
100 - 299	25	8	23	0	56
300 - 499	3	0	3	0	6
500+	15	2	7	0	24
TOTAL	95	42	110	0	

TOTAL ACTUAL LARGE EMPLOYER SAMPLE 254

Employee Travel Survey 1980
Regional Planning Division
Planning and Development Department
Region of Hamilton-Wentworth

TABLE 8

HAMILTON - WENTWORTH

SMALL EMPLOYER PERCEIVED UNIVERSE

EMPLOYER TYPE / EMPLOYEE SIZE	MANUFACTURER CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
0	43	21	91	9	164
1 - 4	1,098	810	2,072	159	4,139
5 - 9	370	205	423	39	1,037
10 - 19	225	87	225	28	565
1 - 19	141	90	228	25	484
Unknown*	458	314	694	27	1,493
TOTAL	2,335	1,527	3,733	287	7,882

* Most of these firms have less than 20 employees

SOURCE: Central Statistical Services
Ministry of Treasury and Economics

Employee Travel Survey 1980
Regional Planning Division
Planning and Development Department
Region of Hamilton-Wentworth

Of this sample of 56, only 36 firms actually participated. The number yielded a confidence level which was below an acceptable standard. A supplementary sample was selected using the same technique. A further telephone verification added 52 firms to the existing sample of 56, for a total sample of 108 firms. Forty-two (42) of the 52 additional firms responded.

With the addition of the supplementary sample, the total number of small firms which participated in the survey was 78. Approximately 72 percent of the selected and verified small firms participated.

5.1.3 Large Firm Employee Responses

The total employment in the Region of Hamilton-Wentworth was approximately 227,000 in 1976 according to Statistics Canada.

Some 31,124 questionnaires were distributed to employees of large firms, 13,925 were completed and returned in a usable form. This represents a response rate of approximately 45% among employees of large firms.

5.1.4 Small Firm Employee Response

In total, 352 questionnaires were distributed to employees in small participating firms. Some 275 questionnaires were completed and returned. This represents a response rate of 78 percent among employees of small firms.

5.2 Type-Size Analysis

5.2.1 Large Firms

A breakdown of the universe of large firms by size and type can be found in Tables 4 and 5. Similar information for sample firms and participating firms can be found in Tables 6 and 7.

In order to apply the information obtained in the survey to the entire Region, a size-type breakdown for each of the macro traffic zones (30) in the Region is necessary. These size-type breakdowns can be found as Items 29 and 29(a) in the Appendix. Included in this series of matrices are the number of firms in the universe by size, type and macro traffic zone as well as the number of participating firms by size, type and macro traffic zone.

Many of the cells in these matrices will remain empty because no firm of this particular size and type exists in the macro zone cited. If the macro traffic zone was one of the eleven (11) selected zones for survey, it is indicated as being "surveyed" on the matrix.

TABLE 9

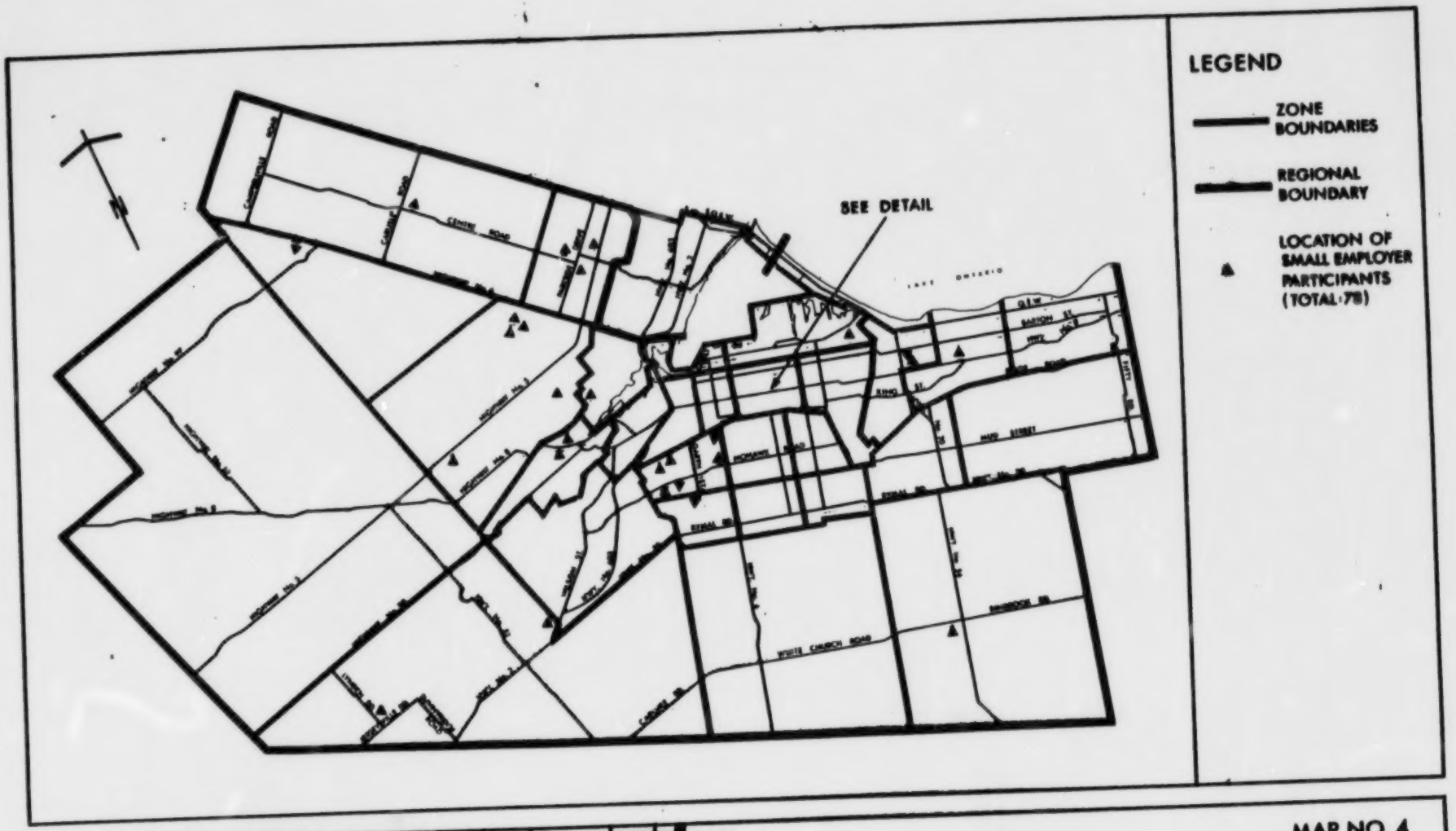
HAMILTON - WENTWORTH

SMALL FIRM EMPLOYEE SAMPLE AND RESPONSE RATE

EMPLOYER TYPE

	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
Small Firms Sampled (0 - 19 employees)	10	24	44	0	78
Questionnaires Circulated	56	109	187	0	352
Response	40	87	148	0	275
Response	71%	80%	79%	0%	78%

Employee Travel Survey, 1980
Regional Municipality of Hamilton-Wentworth
Planning and Development Department



MAP NO. 4

LOCATION OF SMALL EMPLOYER SURVEY PARTICIPANTS

EMPLOYEE TRAVEL SURVEY 1980
REGIONAL PLANNING DIVISION
PLANNING & DEVELOPMENT DEPARTMENT
HAMILTON-WENTWORTH REGION

The number of questionnaires circulated to selected large firms by size, type and macro traffic zone is indicated in the matrices contained in Appendix Item 30. The actual number of questionnaires completed and returned is also included by size, type and macro traffic zone.

Both the selected firm sample and employee sample are products of the methodology detailed in Sections 2.3 and 2.4.

5.2.2 Small Firm Sample

A breakdown of the small firm universe by employer type can be found in Table 8. A similar breakdown for the small firm sample participants is included in Table 9.

The small firm universe by employer type and macro traffic zone, as well as the number of small firms that participated by type and macro traffic zone are included in Appendix Item 31.

The number of questionnaires circulated to employees in small firms by employer type and macro traffic zone, as well as the number completed and returned and the response rate are detailed in Appendix Item 32.

The small firm sample selection process is detailed in Section 2.3. The locations of the small firm survey participants are shown on Map Number 4.

5.3 Confidence and Bias Tests

A myriad of reliability tests could be performed on the various components of the survey. The complicated nature of the survey design provides many opportunities for confidence and bias testing. The application of these tests was kept to a minimum. Basically, one confidence test and one bias test were applied to each of the major sample/response components. These components are: the large employer sample, the small employer sample, the large employer employee response and the small employer employee response.

The confidence level test and non sampling error test used are detailed in Appendix Items 33 and 34. Confidence and error levels are well within acceptable bounds.

5.4 Special Questionnaire Comments

A section of the employee questionnaire invited general comments. These special comments were catalogued manually and the results are on file. Questions 4, 5, 8 and 11 provided a space for "other" answers. If these "other" answers could not be placed in the spaces provided (note virtually all of question 11 "other" answers could be slotted into existing categories) then these special answers were also categorized and placed on file.

6.0 EVALUATION

Certain aspects of the survey need to be highlighted and evaluated. This section discusses the survey methodology, limitations of the study, suggestions for future surveys of this sort and suggestions for the interpretation of survey data.

6.1 Methodology

On the whole, the survey proved to be successful. Satisfactory response rates were obtained and confidence and error levels were acceptable.

A number of problems were encountered during the course of the survey. Some of these problems relate to the nature of the employer/employee universe while others are methodology problems.

A large percentage of employees in Hamilton-Wentworth work in steel related manufacturing. Most of these employees are unionized. In many cases, it was discovered that friction and a certain amount of mistrust exist between management and organized labour in these firms. This situation could have led to a very poor response rate in some firms. To solve the problem, contact was made with both managment and union personnel in these firms.

Distribution of the questionnaire in industrial firms was often difficult. A variety of distribution approaches were used, depending on the employer situation. These techniques are detailed in the text and included distribution in pay envelopes, at entrance gates, with time clock cards and via the mail.

Another problem associated with the methodology was the amount of staff time required for the study. The study time was underestimated due to a variety of reasons and the study was extended into 1981.

A further problem involved the small firm sample obtained through the Ministry of Treasury and Economics. The existence of a large portion of the original sample could not be verified. As a result, a second sample had to be selected in order to raise the confidence level of the final sample to an acceptable level.

Two further aspects of the study were of such importance that they merit emphasis here.

The questionnaire design phase is very crucial. It is important to design a questionnaire which is brief and clear. It is also essential that the questionnaire contain an explanation of why the information is required. The questionnaire used proved to be quite satisfactory in this regard.

The employer interview was also a crucial step. The use of enthusiastic but businesslike interviewers had a definite effect on co-operation and hence the return rate.

The value of the study to the employer himself required emphasis (i.e. that the study may eventually result in improved employee punctuality because of improved transit etc.).

6.2 Study Limitations

A number of cautions must be given regarding the use of study results. The sample selection process and questionnaire administration methodology were complicated procedures which involved a number of assumptions. Users of the study output must be fully aware of these assumptions.

The reliability and bias tests applied to the sample and results respectively, indicate that a high level of confidence can be placed in the study product. However, the application of this product must be accomplished while cognizant of a number of limitations.

This first caution highlights two basic assumptions made throughout the study. It was repeatedly assumed that answered questionnaires represent the answers that non-respondents would have given. In other words, it is assumed that the travel and personal characteristics of respondents and non-respondents are similar.

Further, it was assumed that the actual employer universe was the same or similar to the perceived universe which was used for sample selection. The perceived universe was in some cases out of date. In some macro traffic zones which had developed recently or declined recently, the sample selected may not fully represent the zone characteristics. This was due to the dated nature of the perceived universe. In some macro zone cells, the number of participating firms actually exceeded the perceived universe.

The second caution relates to the cumulative nature of potential errors which may affect the representatives of the sample. The difference between the actual and perceived universe has already been highlighted. Due to time and budget restrictions, only eleven (11) (albeit the most important eleven) of the thirty (30) macro traffic zones in the Region were selected for large firm sampling.

Further, in these selected zones, a sample of the employers was made. Some of the selected employers would not participate in the survey, providing a further potential for bias. The employee response rates vary from employer to employer and in some firms is quite low. In order to assure a representative sample, a random selection procedure was employed at each step where staff made a sample choice. The cumulative potential error referred to here will not, in all likelihood, materialize in full magnitude because errors are unlikely to totally lean in one direction continually.

The last and perhaps most important caution regards the applicability of the product data to transportation planning techniques, specifically origin destination versus trip generation analysis. The specific data gathered contain true origin destination information. This data could be successfully interpolated in the selected macro traffic zones (11) to represent origin-destination characteristics. However, because only certain macro traffic zones were selected for the large firm sample, origin-destination characteristics cannot be extrapolated to apply to non-sampled zones. Trip generation characteristics identified in sampled zones could however, be applied to similar non-sampled zones. This is the salient application restriction associated with the methodology used.

6.3 Use of Information and Future Study Suggestions

A number of suggestions can be made regarding the study which might improve future studies of this sort. Suggestions are also made regarding the use of information gleaned from this study.

1. Although an acceptable employer universe was constructed from several sources, a comprehensive and recent universe would have improved the sample selection process. It is recommended that, if possible, studies of this sort be preceded by an "employment inventory". An "employment inventory" would also facilitate the process by which study data is "built up" to represent universe travel characteristics.

2. The employer/employee sample sizes used were selected to ensure a usable result. It appears that the sample may have been far larger than required. The employment sample, for example, was approximately 16%, which represented a confidence level of 99.99% (t = 39). The size of this sample could possibly be reduced, with associated cost and time savings if actual sample requirements and reliability data were available. To this end, research in this area by the Ministry of Transportation and Communications may result in cost savings and more representative samples.

3. As with all studies, specific objectives must be defined early in the study process. It is particularly important to relate specific product needs to questionnaires and study design.

4. It was found that due to the diverse nature of the employer/employee universes, a flexible approach must be maintained. A great deal of time must be allocated to details which will improve sample response. Innovative approaches and a highly organized methodology are essential to a successful study.

5. It is suggested that the personal characteristics identified in the study product be verified against Statistics Canada data. Specific verifications that could be employed by macro traffic zone include; employment breakdown, car ownership, sex and population distribution.

6. The cautions highlighted in 6.3.2 above should be noted when using study results. Specific care and thought should be exercized when using data for origin-distribution or trip generation purposes.

APPENDIX

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Planning and Development Department
P.O. Box 910, Hamilton, Ontario L8N 3V9

A-1

April 23,1980

Refer to File No. 520.23
Attention of
Your File No.

MEMORANDUM NO.1024

To: The Chairman and Members
of the Regional Planning
and Development Committee

SUBJECT: Employee Travel Characteristic Survey

1. BACKGROUND

The Regional Planning and Development Department has developed a computer based travel forecasting model capable of estimating future travel associated with planned development for the Region. This model is necessary to determine the transportation impacts of the planned development and to provide estimates of future travel on which to base plans for new or improved road and transit facilities.

The model provided important analysis for decision making in the Regional Official Plan process. It has also provided the information on which the need for the analysis of and/or the design requirement for transportation facilities were established in the following Transportation Studies:

- The Industrial Perimeter Road.
- Burlington St. East improvements.
- The Mountain East-West and North- South Roadway.
- The Hamilton Rapid Transit Project.
- The Town of Dundas - Downtown Transportation Study.
- The Town of Stoney Creek - Niagara Escarpment Access Study.

In addition the model is being used as a basis on which to review the potential timing and priority of major capital expenditures on transporation facilities.

The travel forecast model will be required to provide travel demand forecasts for the Intermediate Capacity Transit System Study now being undertaken by the Region. This study will require more detailed estimates of travel demand and the potential for transit riders than any of the previous studies.

The travel model operates on a computer simulation of personal travel characteristics applied to projection of future development and land use activity. It is therefor e important to input to the model up to date information on representative travel behaviour of people in the Region.

The model now operates on information on travel behaviour collected in a Home Interview Travel Characteristics Survey conducted in 1974. Because of the time span and the related changes in economics this survey should be updated and/or verified. In addition, the information was collected at the home end of the trip maker and does not provide the best data on work trip characteristics.

Since the majority of transit trips are work related it is important to have up to date data on work travel characteristics as input into Intermediate Capacity Transit Systems Study.

2. PROPOSED SURVEY

It is proposed that an Employment End Travel Characteristics Survey be carried out to provide the necessary data to update the travel forecast Model and provide data to the Intermediate Capacity Transit System Study. The survey would collect information on the following:

1. The specific location of trip attractions (i.e. the place of work) in relation to the place of residence.

2. The choice between travel by car or by transit.

3. The time of travel and the effect of shift work on our peak-hour based model.

4. The number and length of trips made by persons.

5. Other matters associated with the work trip including attitudes to car and van pooling, parking habits and sidetrips associated with the work trip.

The survey would take the form of a questionnaire which would be given to employees via their employer. The questionnaire would include 10-12 questions regarding time and mode of travel, place of residence, attitudes towards transit and van pooling etc. The questionnaire would then be retrieved by the employer and returned to the Region for coding, key punching, analysis and use in the travel forecast model.

It is not necessary to supply a questionnaire to every employee in the Region. A sample representing employers of different size and type (stratified random sample) would project a sufficient data base on which to project future travel requirements.

3. STUDY BUDGET

The total project cost is estimated to be $15,000, 75% of which would be funded by the Ministry of Transportation and Communications. The Regional proportion of the cost would therefore be $3,750. Included in the budget would be expenditures for computer time, printing, student/parttime staff and some consultant's fees.

Funds are allotted for this study in the 1980 departmental budget. Regional Council authorization for this particular study is required before the Ministry of Transportation and Communications subsidization can be approved.

4. RECOMMENDATIONS

It is recommended that:

(a) The staff of Regional Planning and Development Department undertake an Employment End Travel Characteristics Survey in 1980 in order to provide up to date estimates of travel demand for the Intermediate Capacity Transit Study now being undertaken by the Region.

(b) The Provincial Ministry of Transportation and Communications be requested to subsidize seventy-five percent of the study costs estimated to total $15,000.

Respectfully submitted,

D. A. Lychak, M.C.I.P.
commissioner
Planning and Development.

gb
JBW/JAB/JAG/hk

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Office of the Clerk
Century 21, 100 Main Street East
P.O. Box 910, Hamilton, Ontario L8N 3V9

Refer to File No.
Attention of
Your File No.

4. THAT the staff of Regional Planning and Development Department undertake an Employment End Travel Characteristics Survey in 1980 in order to provide up to date estimates of travel demand for the Intermediate Capacity Transit Study now being undertaken by the Region; and

THAT the Provincial Ministry of Transportation and Communications be requested to subsidize seventy-five per cent of the study costs estimated to total $15,000.

I hereby certify the foregoing to be a true copy of Item 4 of PLANNING AND DEVELOPMENT COMMITTEE REPORT 9-80 which was approved by Regional Council on May 6, 1980.

Dated at Hamilton,
this 11th day of July, 1980

Joan M. Ballup
Clerk

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Planning and Development Department
P O Box 910, Hamilton, Ontario L8N 3V9

A-2

January 5,1981

Refer to File No R.520.23
Attention of
Your File No

Mr. R. S. Pillar
Director
Policy Planning Branch
Ministry of Transportation and Communications
4th Floor
West Tower
1201 Wilson Street
Downsview, Ontario
M3M 1J8

Re: Employment End Travel Characteristics Survey

Dear Bob:

The above mentioned survey has been carried on in Hamilton -Wentworth under a funding agreement with your Ministry. The survey was started in the summer of 1980, and was estimated to cost $15,000 to cover all extra costs to be incurred by the Region. Your Ministry agreed to pay 75% of the costs up to $11,250.00.

The original cost estimates will be exceeded for the following reason

> The work load of interviewing, distributing and collecting the surveys has taken more time than estimated. Therefore, survey staff hired from September to December 1980, did not have sufficient time to code the returned questionnaires. Therefore, an additional student will have to be hired to code the questionnaires in the period from January to April 1981 (estimated cost $4,000). This student will also have to complete the pickup of completed surveys (estimated cost for travel $200.00).

The survey cost estimate originally had a contincency of 10% but this has already been exceeded due to unexpected costs for travel, mailing of survey to selected sample for some large companies, and higher printing costs. Expenditures on the survey to date total $15,297.26.

.../2

Attached is an accounting of expenditures to date and an estimate of additional costs. I would ask that our budget for the survey be increased by $4,500.00 to allow for the extra cost of the student, travel costs and the existing cost over-run of $300.00. This would require an additional subsidy of $3,375.00 from your Ministry.

A bill for the survey costs to date is being forwarded to Mr. V. C.Ma under separate cover.

Thank you for your consideration in this matter.

Yours truly,

John A. Barr

John A. Barr. P.Eng.,
Senior Planner

JAB;hk
Encl.

c.c. V. C. Ma
D. A. Lychak
J. Gartner.

A-3

Ontario

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Ministry of
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Communications

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Downsview, Ontario
M3M 1J8

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RECEIVED JAN 19 1981

Mr. John A. Barr, P.Eng.,
Senior Planner
The Regional Municipality of
Hamilton-Wentworth
Planning and Development Department
PO Box 910
Hamilton, Ontario
L8N 3V9

Dear John:

Re: Employment End Travel Characteristics Survey
- File No. R.520.23

Thank you for your letter of January 5, 1981, concerning an additional subsidy of $3,375.00 from the Ministry.

We are aware of the problems encountered in distributing and collecting the surveys and agree to increase the subsidy by $3,375.00. Our Office of Legal Services will amend the agreement accordingly.

Yours truly,

R. S. Pillar,
Director.

EMPLOYMENT END TRAVEL CHARACTERISTICS SURVEY

Expenses to December 31, 1980

Consultant	
Tranplan Associates	$ 350.00
Printing	
Questionnaire	2,143.08
Questionnaire, Italian	34.99
Envelopes	122.46
Students	
J. Clohecy	2,520.00
A. Gerek	2,638.72
B. Skoczny	2,881.76
C. Metham Including 4% Vacation Pay + 8% Fringe Benefits	3,141.60
Traveling	
3,300 miles	858.00
Miscellaneous, parking, etc.	50.15
Mailing	
Postage Costs	556.50
TOTAL	$15,297.26

EMPLOYMENT END TRAVEL CHARACTERISTICS SURVEY

Expected Expenses in 1981

Students	$ 4,000.00
Travel	200.00
TOTAL	$ 4,200.00
GRAND TOTAL	$19,497.26

LIST OF PARTICIPATING SMALL FIRMS

REGION OF HAMILTON-WENTWORTH

1980 TRAVEL SURVEY

NO.	CODE	
(1)	0001	Hayes Auto Sales Ltd. 22 King St. East Dundas, Ontario
(2)	0002	Vendol 60 Grant Blvd. Dundas, Ontario L9H 4M1
(3)	0004	John R. Casey Real Estate Ltd. P.O. Box 31 Dundas, Ontario L9H 5E7
(4)	0006	D. J. W. Faught P.O. Box 420 24 Dundas St. E. Waterdown, Ontario L0R 2H0
(5)	0007	Benjamin Bunny Nursery School 58 Parkside Drive East Waterdown, Ontario
(6)	0008	Youngs Farm & Industrial Equipment Ltd. Clappison's Corners Waterdown, Ontario L9J 1G7
(7)	0009	J. R. Ward Enterprises Ltd. Freelton, Ontario L0R 1K0
(8)	0010	W. H. Bidwell Equipment Ltd. Box 136 Lynden, Ontario L0R 1T0
(9)	0012	Leatherdale Stables Box 44, Millgrove, Ontario L0R 1V0
(10)	0013	Vanderkooy Garden Lane R. R. 1, Millgrove, Ontario L0R 1V0
(11)	0016	Wentworth Plumbing Co. Ltd. 59 1-2 Dundurn St. N. Hamilton, Ontario L8R 3E2

(12) 0018 Westdale Health Foods
1063 King West
Hamilton, Ontario
L8S 1L8

(13) 0019 Vernon Howell & Son Ltd.
28 King St. E.
Hamilton, Ontario
L8S 1L6

(14) 0020 Skyway Life Insurance Agencies Inc.
Suite 704
105 Main Street East
Hamilton, Ontario
L8N 1G6

(15) 0021 George H. Tinsdale C.A.
149 Main St. E.
Hamilton, Ontario
L8N 1G4

(16) 0022 Richardson's Tire Centre Ltd.
260 Main St. E.
Hamilton, Ontario
L8N 1H7

(17) 0023 Book Cellar
144 James St. S.
Hamilton, Ontario
L8P 3A2

(18) 0024 Stewart Interiors Ltd.
209 McNab St. S.
Hamilton, Ontario
L8P 3C8

(19) 0025 Partridge Plumbing & Heating
243 Hughson St. N.
Box 424
Hamilton, Ontario
L8L 4M4

(20) 0026 Shearmax Leasing Ltd.
206 Main St. W.
Hamilton, Ontario
L8P 1J3

(21) 0027 Dr. Leslie Lehoczky
499 Main St. E.
Hamilton, Ontario
L8M 2P8

(22) 0028 Rose-Vera Hairstyling
20 Barton St. E.
Hamilton, Ontario
L8L 2V5

(23)	0030	Canadian Specialties Ltd. 223 Avondale Street Hamilton, Ontario L8H 7K6
(24)	0031	Fred Whitley 107 Kensington Avenue S. Hamilton, Ontario L8M 3H1
(25)	0032	Dr. Morris J. Lazarowich 987 King St. E. Hamilton, Ontario
(26)	0033	MacKesy's Electric Appliances 1000 King Street Hamilton, Ontario L8M 1C8
(27)	0034	Mums Fish & Chips 1057 Cannon St. E. Hamilton, Ontario L8L 2H9
(28)	0035	P. B. Electronic Supply Company Ltd. 1072 Barton St. E. Hamilton, Ontario L8L 3E6
(29)	0038	Velenosi & Thorne Realtor 355 Queenston Road Hamilton, Ontario L8K 1H8
(30)	0040	Hydraulic Service Centre Hamilton Ltd. 495 Rennie Street Hamilton, Ontario L8H 3P6
(31)	0042	S I M Industrial & Mechanical Ltd. 6 Gainsborough Rd. Hamilton, Ontaric L8E 1E1
(32)	0044	Parkdale Free Methodist Church in Canada 15 Jefferson Avenue Hamilton, Ontario L8H 1A6
(33)	0046	Dr. William C. Madronich 2354 King St. E. Hamilton, Ontario L8K 2C6
(34)	0047	P.D.Q. Mobile Wash 11 Millstream Crt. Hamilton, Ontario

(35) 0048 Beth Sar Shalom Mission
536 Concession St.
Hamilton, Ontario
L8V 4L8

(36) 0050 Active TV & Appliances
521 Upper Sherman Avenue
Hamilton, Ontario
L8V 3L9

(37) 9901 The House of Beauty
336 Queenston Rd.
Hamilton, Ontario
L8K 1H6

(38) 9902 Drs. Thomson & Booth
48 Balmoral Avenue N.
Hamilton, Ontario
L8L 7R4

(39) 9903 Drs. Bryans & Currie
43 King William St.
Hamilton, Ont.
L8R 1A2

(40) 9905 Messrs. Howell & Howell
105 Main St. E.
Hamilton, Ont.
L8N 1G6

(41) 9907 Omen Lee & Associates
440 Main St. W.
Hamilton, Ont.
L8P 1K6

(42) 9908 Eastway Datsun
544 Highway #8
Stoney Creek, Ontario
L8G 3X5

(43) 9909 Irvings Famous Clothes
62 James St. N.
Hamilton, Ontario
L8R 2K5

(44) 9910 Wilfrid Rice TV & Electronics Ltd.
638 Concession St.
Hamilton, Ontario
L8V 1B5

(45) 9912 Scott Radio Service
7 Province St. N.
Hamilton, Ontario
L8H 4H3

(46) 9913 Erickson Lee MacDonald & Co.
25 Main St. W., Suite 805
Hamilton, Ontario
L8P 1H1

(47) 9914 Del Mar Real Estate Ltd.
196 Parkdale Avenue N.
Hamilton, Ontario
L8H 5X2

(48) 9916 Bates & Green Garage
9th Concession Road
Carlisle, Ontario
L0R 1H0

(49) 9917 Hansel & Gretel Co-Op Nursery School Hamilton Inc.
47 Ottawa St. S.
Hamilton, Ontario

(50) 9918 Alma Lou Flower Shop
630 Main St. E.
Hamilton, Ontario
L8M 1S7

(51) 9919 Key Personnel Inc.
25 Main St. W., Suite 2218
Hamilton, Ontario
L8P 1H1

(52) 9921 Alphonse A. Lanza
Barrister & Solicitor
50 King St. E., Suite 200
Hamilton, Ontario
L8N 1A6

(53) 9922 Cortina Shoes - E. & M. Spadafora
801 Mohawk Rd. W.
Hamilton, Ontario
L9C 6C2

(54) 9923 Dr. Joseph Bakty
696 Concession St.
Hamilton, Ontario
L8V 1C1

(55) 9924 Booths Babyland Ltd.
581 Concession St.
Hamilton, Ontario
L8V 1B2

(56) 9925 Catharine Brocklodge Inc.
20 Emerald St. S.
Hamilton, Ontario
L8N 2V2

(57) 9926 Katsaros Fur Mfg. (Hamilton Ltd.)
1607 Main St. E.
Hamilton, Ontario
L8H 1C4

(58) 9927 McQuesten Legal & Community Services
360A Queenston Rd. E.
Hamilton, Ontario
L8K 1H9

(59) 9928 Garth & Garrow Fish & Chips
1300 Garth St.
Hamilton, Ontario
L9C 4L7

(60) 9929 Bryan Burnside Insurance Agency Limited,
76 Dundas St. W.
Waterdown, Ontario
L0R 2H0

(61) 9930 B. Piersanti & Sons
155 Wentworth St. N.
Hamilton, Ontario
L8L 5V6

(62) 9932 Dr. Donald Whittier
55 Sydenham Drive
Dundas, Ontario
L9H 2T8

(63) 9933 MacNeil Baptist Church
1145 King St. W.
Hamilton, Ontario

(64) 9935 Dr. Cecil E. Walker
Chedoke McMaster Hospital
Sanitorium Road
Hamilton, Ontario

(65) 9936 David Helson Esq.
Barrister & Solicitor
92 King St. Suite 957
Hamilton, Ontario
L8N 1A8

(66) 9938 Assumption Hall
1406 Barton St. E.
Hamilton, Ontario
L8H 2W5

(67) 9939 Genesee TV Ltd.
542 Upper James St.
Hamilton, Ontario
L9C 2Y4

(68)	9940	Andrew Szabo & Assoc. Ltd. Box 859, Station A Hamilton, Ontario L8N 3N9
(69)	9941	Debonair Barber Shop Hamilton, Ontario L8V 4S9
(70)	9942	Empire Plumbing & Htd. 330 West 2nd Street Hamilton, Ontario L9C 3H4
(71)	9943	Elwood Stemmler R. R. 1 Millgrove, Ontario L0R 1V0
(72)	9945	Joseph Laskin Ltd. 112 King St. E., Suite 852 Hamilton, Ontario L8N 1A8
(73)	9946	Betzner Equipment R. R. 2 Dundas, Ontario L9H 5E2
(74)	9947	Weekend Mobile Wash 560 Scenic Drive Hamilton, Ontario L9C 1G8
(75)	9948	Belchan Inv. Serv. Ltd. 140 Centennial Pkwy. N. Hamilton, Ontario L8E 1H9
(76)	9951	John Wynen Haulage 3508 Hwy. 56, Box 33 Binbrook, Ontario L0R 1C0
(77)	9952	Marine Intercontinental Stevedoring Co. Box 845 Hamilton, Ontario L8N 2N9

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 7

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Renstein & Koppel	21 Hatt St., Dundas	0702	249	1
Valley City Mfg.	64 Hatt St., Dundas	0703	155	1
M. A. Henry	1 Head St., Dundas	0705	91	1
Miracle Food Mart	63 Main St. W., Dundas	0706	91	4
Do-Tan Mfg. Ltd.	15 Hatt St., Dundas	0707	84	1
Post Wright Pkg.	356 McNab St., Dundas	0708	30	5
Serv-A-Station	368 Mill St., Dundas	0710	30	5
Dundas Valley Golf & Curling Club	Woodley's Lane, Dundas	0711	45	5
J. R. Ferguson Ltd.	10 Hope St., Dundas	0714	25	1
Wilson Laboratories	334 Hatt St., Dundas	0715	26	1
J. W. Anderson	44 Head St., Dundas	0716	30	1
Town of Dundas Arena	33 Market St. Dundas	0718	10	5
Canadian Tire	50 Cootes Drive, Dundas	0719	100	4
Dundas Town Library	18 Ogilvie St., Dundas	0721	22	5
Yorkview Public School (Went.)	Cameron Avenue, Dundas	0723	17	5
Pleasant Valley Public School (Went.)	Turnbull Avenue, Dundas	0724	24	5
Highland Secondary School	Governor's Road, Dundas	0725	76	5

NAME	ADDRESS	CODE	SIZE	TYPE
Dundana Public School (Went.)	Dundana Avenue, Dundas	0726	20	5
Parkside Secondary School (Went.)	Parkside Avenue, Dundas	0727	70	5
Dominion Stores	100 Plaza Drive, Dundas	0728	89	4
Sears	80 Plaza Drive, Dundas	0729	73	4
Bank of Nova Scotia	24 Plaza Drive, Dundas	0731	27	5

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 8

Legend: 1 - MCW - Manufacturing
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Hamilton Region Conservation Authority	P.O. Box 99, Ancaster 838 Mineral Springs Rd., Ancaster	0801	45	5
Ancaster High & Vocational (Went.) School	314 Jerseyville Rd., Ancaster	0802	122	5
Dominion Stores	46 Wilson St. W., Ancaster	0803	27	4
Wentworth Board of Education	357 Wilson St. E., Ancaster	0808	497	5

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 10

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Peninsula Air Services	Civic Airport P.O. Box 25, Mount Hope	1001	57	3
Condor Aviation Service Ltd.	Civic Airport, Mount Hope	1002	50	4
Star Brand Packers	Hwy. #56, Binbrook	1004	23	1
Mount Hope P.S. (Went.)	Airport Rd. W., Mount Hope	1006	23	5
Sheldricks' Dried Flowers Ltd.	9206 Dickenson Rd. Mount Hope	1007	40	4

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 14

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
E. D. Smith & Sons	Hwy. #8, Winona	1401	270	1
Ford Smith Machine Co. Ltd.	675 Idlewilde Ave., Fruitland	1403	65	1
Innsville Hotel	Hwy. #8, Stoney Creek	1404	80	5
Chipman Chemicals	400 Jones St., P.O. Box 9100 Stoney Creek	1405	80	
Town of Stoney Creek Municipal Office	777 Hwy. #8, Fruitland	1406	55	5
Town of Stoney Creek Roads Dept.	777 Hwy. #8, Fruitland	1407	30	5
Carpenter Die Casting	540 Q.E.W., Stoney Creek	1408	38	1
Vickers-Warnock Ltd.	342 DeWitt Rd. N. Stoney Creek	1409	22	3
Barton Metal Work Ltd.	733 Barton St, R. R. #2 Stoney Creek	1410	22	1
Brown & Roberts	Fifty Rd., Box 40, Winona	1411	23	1
Dominion Auto Supply	404 Fruitland Rd., P.O. Box 10 Fruitland	1413	26	4
Winona Public School (Went.)	Barton St. - Lewis Rd.	1414	18	5
Orchard Park Secondary (Went.) School	247 DeWitt Rd., Stoney Creek	1415	89	5
Hamilton-Wentworth Police	777 Hwy. #8, Fruitland	1416	63	5

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 18

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Dare Foods Ltd.	84 Jackson St. E., Hamilton	1800	125	1
St. Joseph's Hospital	50 Charlton Ave. E., Hamilton	1802	1,994	5
T. Eaton Co. Ltd.	43 James St. N. Hamilton	1804	703	4
Copley, Noyes & Randall	56 York St., Hamilton	1805	580	1
Hamilton Board of Education	100 Main St. W., Hamilton	1806	237	5
Rheem Canada Ltd.	128 Barton St. W., Hamilton	1809	210	1
Intermetco	1 James St. N., Hamilton	1810	105	1
Right House Co.	35 King St. E., Hamilton	1812	250	4
The Old Spectator	80 King William St., Hamilton	1813	195	5
Royal Connaught Hotel	112 King St. E., Hamilton	1814	170	5
CHCH-TV	163 Jackson St. W, Hamilton	1817	172	5
National Paper	144 Queen St. N., Hamilton	1818	110	5
S. S. Kresge Co. Ltd.	45 King St. E., Hamilton	1820	118	4
Canadian Imperial Bank of Commerce	6 James St. S., Hamilton	1821	133	5
Robinson Cone	42 Cannon St. W., Hamilton	1822	108	1
Maurice Carter Chev-Olds	155 Cannon St. E., Hamilton	1823	120	4
Lloyd D. Jackson Square	110 King St. W., Hamilton	1824	125	4
Cannon Knitting Mills	134 Mary St., Hamilton	1826	73	1
Holiday Inn	150 King St. E., Hamilton	1827	100	5

NAME	ADDRESS	CODE	SIZE	TYPE
I.B.M. Canada	25 Main St. W., Hamilton	1828	155	5
Hamilton Motor Products	132 Main St. W., Hamilton	1829	90	4
Bay-King Motors	185 King St. W., Hamilton	1830	61	4
Royal Trust Co.	100 King St. W., Hamilton	1831	60	5
Dynes Electric Ltd.	14 Walnut St. N., Hamilton	1832	45	2
Mutual Life Assurance	25 Charlton Ave. E., Hamilton	1833	56	5
Canada Trust	46 King St. E., Hamilton	1834	54	5
Commercial Union Assurance	110 King St. W., Hamilton	1835	46	5
Xerox of Canada	110 King St. W., Hamilton	1837	45	3
Lockwood Motors	69 Kelly St., Hamilton	1839	43	4
St. Joseph's Community Clinic	43 Charlton Ave. E., Hamilton	1844	25	5
Hamilton Separate School Board	90 Mulberry St., Hamilton	1845	200	5
Livingston, Jordan Furs	150 Main St. E., Hamilton	1847	19	4
Hamilton Place	50 Main St. W., Hamilton	1848	30	5
Clarion Nursing Home	120 Hunter St. W., Hamilton	1849	31	5
G. T. French Paper	107 MacNab St. N., Hamilton	1850	31	3
Manufacturers Life	110 King St. W., Hamilton	1851	27	5
Rapid Blue Print	35 King William St., Hamilton	1852	24	4
Alexanian & Sons	228 King St. E., Hamilton	1853	25	4
Hamilton Store Fixtures	206 King St. W., Hamilton	1854	25	3
Consumer & Corp. Affairs	10 John St. S., Hamilton	1859	9	5
Public Works	10 John St. S., Hamilton	1860	24	5
Revenue Canada - Customs	10 John St. S., Hamilton	1861	130	5

NAME	ADDRESS	CODE	SIZE	TYPE
Post Office	10 John St. S., Hamilton	1862	400	5
City of Hamilton - Fire Department	59 King William St., Hamilton	1864	38	5
Federal Government - Various Depts.	150 Main St. W., Hamilton	1874	513	5
Nethercott-Lee VW, Porsche & Audi	205 Cannon St. E., Hamilton	1878	46	4
Brewer's Warehousing	150 Barton St. E., Hamilton	1879	60	3
Foster's Fashions	110 King St. W., Hamilton	1880	35	4
Barnard-Matthews	8 George St., Hamilton	1881	38	1
Cancon Inc.	175 Stuart St. N., Hamilton	1883	120	1
Superior Engravers	42 Mary St., Hamilton	1884	40	1
Fay Jackson Ltd.	157 King St. E., Hamilton	1886	41	4
Hamilton Auto Supply	127 Bay St. N., Hamilton	1888	32	4
Felton	29 Harriet St., Hamilton	1889	35	1
Bell Canada	160 Bay St. N., Hamilton	1890	16	3
Bell Canada	20 Hunter St. W., Hamilton	1891	160	3
Region of Ham-Went. City Hall	71 Main St. W., Hamilton	1893	129	5
Region of Ham-Went. Century 21	100 Main St. E., Hamilton	1894	236	5
Hamilton-Wentworth Police	155 King William St., Hamilton	1895	578	5
City Hall	71 Main St. W., Hamilton	1896	600	5
Stelco - Stelco Tower	100 King St. W., Hamilton	1897	1,586	1
Canadian Red Cross	400 King St. E., Hamilton	1898	21	5
Union Gas Ltd.	23 Main St. E., Hamilton	1899	102	5

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 20

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Dofasco	1330 Burlington St. E. Hamilton	2001	11,000	1
National Steel Car	Kenilworth Ave. N., Hamilton	2002	1,500	1
Firestone Canada	1570 Burlington St. E., Hamilton	2003	1,700	1
Procter & Gamble	1142 Burlington St. E., Hamilton P.O. Box 589	2004	875	1
Otis Elevator	414 Victoria Ave. N., Hamilton	2005	749	1
Burlington Steel	319 Sherman Ave. N. Hamilton	2006	780	1
American Can Co.	291 Victoria Ave. N., Hamilton	2007	700	1
Reid-Dominion Packaging	425 Parkdale Ave. N., Hamilton	2008	400	1
Stanton Pipe	600 Kenilworth Ave. N., Hamilton	2011	295	1
Stanley Steel Co.	57 Gerrard St., Hamilton	2012	230	1
Norton Co. of Canada	3 Beach Road, Hamilton	2013	154	1
Lewis Insulators	400 Gage Ave.N., Hamilton	2014	40	2
Allan Candy	356 Emerald St. N. Hamilton	2015	210	1
Permalite Ind.	1480 Brampton St., Hamilton	2016	200	1
Beauty Ind. Ltd. Hamilton	270 Sherman Ave. N., Hamilton	2017	120	1
City Laundry	525 Parkdale Ave. N., Hamilton	2019	78	5
Bridge and Tank	390 Gage Ave. N., Hamilton	2020	137	1
Eastgate Ford	350 Parkdale Ave. N., Hamilton	2022	118	4
Waxman & Sons	75 Windermere Rd., Hamilton	2023	124	5
Taylor Forge Canada	1675 Burlington St. E., Hamilton	2024	100	1
Inter-City Truck	695 Woodward Ave., Hamilton	2026	21	5

NAME	ADDRESS	CODE	SIZE	TYPE
Havco Automatic Vending	377 Gage Avenue N., Hamilton	2027	30	5
Drug Trading Co.	76 Brigger Ave., Hamilton	2028	63	5
International Motor Truck	601 Burlington St. E., Hamilton	2029	70	4
Wans L. Truck Repair	489 Victoria Ave. N., Hamilton	2031	45	5
Ippolito Fruit & Produce	472 Wellington St. N., Hamilton	2032	50	4
Sterling Oil Dist.	450 Wellington St. N., Hamilton	2034	23	3
Smith Transport	89 Glow Avenue., Hamilton	2035	23	5
Danica Cabinet	647 Parkdale Ave. N., Hamilton	2036	20	1
Hamilton S.P.C.A.	658 Parkdale Ave. N., Hamilton	2037	20	5
White Supply Co.	1690 Brampton Ave., Hamilton	2038	25	3
Taggart Transportation	185 Niagara St., Hamilton	2039	15	5
Parkdale International	401 Parkdale Ave. N., Hamilton	2041	28	3
Boston Insulated Wire	118 Shaw St., Hamilton	2043	60	1
Lloyd George School	360 Beach Rd., Hamilton	2044	21	5
Robert Land School	460 Wentworth St. N. Hamilton	2045	34	5
L. E. Taylor Assoc.	555 Parkdale Ave. N., Hamilton	2046	36	1
Union Drawn Steel	1350 Burlington St. E., Hamilton	2047	159	1
Westinghouse Canada	286 Sanford Ave. N., Hamilton P.O. Box 516	2052	2,050	1
Bell Canada	Rennie St., Hamilton	2053	16	5
Region of Ham-Went. Water Treatment	Woodward Ave., Hamilton	2054	23	5
Stelco - Hilton Works	Wilcox St., Hamilton	2055	14,270	1
Stelco - Parkdale	Strathearne Ave. N., Hamilton	2056	546	1
Sears	690 Rennie St., Hamilton	2057	100	4

NAME	ADDRESS	CODE	SIZE	TYPE
International Harvester	208 Hillyard St., Hamilton	2058	725	1
Amcan Castings	10 Hillyard St., Hamilton	2059	200	1
Eaton-Yale Ltd.	686 Parkdale Ave. N., Hamilton	2060	81	1
Niagara Paint & Chemical	2 Hillyard St., Hamilton	2062	36	3
Eureka Tool Steel Welding	745 Woodward Ave., Hamilton	2063	25	1

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 21

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Hamilton General Hospital	237 Barton St. E., Hamilton	2102	226	5
Domglass Inc.	Chapple St., Hamilton	2103	781	1
Hamilton Street Railway	18 Wentworth St. N., Hamilton	2104	671	5
Glendale Spinning Ltd.	200 Glowdale, Hamilton	2107	325	1
Arrow Co. Ltd.	450 Cumberland Ave., Hamilton	2108	268	1
Kronas Real Estate	366 Main St. E. Hamilton	2109	36	5
Consolidated Bathurst	193 Cavell Ave., Hamilton	2110	258	1
Porritts & Spencer	240 Lottridge Ave., Hamilton	2111	192	1
St. Peter's Centre	88 Maplewood Ave., Hamilton	2112	350	5
Life Savers Canada	100 Cumberland Ave., Hamilton	2113	145	1
Westbourne Central Supply	21 Sanford Ave. N., Hamilton	2115	165	3
Hamilton Automobile Club	393 Main St. E., Hamilton	2116	160	5
Ontario Department of Revenue	447 Main St. E., Hamilton	2117	89	5
Cloke & Sons	408 Cumberland Ave., Hamilton	2121	56	4
Vine & Partners	733 King St. E., Hamilton	2125	25	5
W. L. Griffin Ltd.	18 Linden St., Hamilton	2126	36	1
Hill TV and Radio	351 Main St. E., Hamilton	2127	37	4
Hamilton Co-Axial	1120 Main St. E., Hamilton	2128	28	5

NAME	ADDRESS	CODE	SIZE	TYPE
Imperial Optical	961 Main St. E., Hamilton	2129	21	4
Mills Metal Ind.	99 Ashley St., Hamilton	2130	20	3
Midtown Motors	756 King St. E., Hamilton	2133	22	4
S. E. Graphics	70 Sanford Ave. N., Hamilton	2134	23	1
Olivetti Canada	444 Main St. E., Hamilton	2135	17	4
Hamilton Foundry	33 Clinton St., Hamilton	2136	35	1
Adler's Furniture	241 Ottawa St. N., Hamilton	2137	20	4
General Motors Acceptance	499 King St. E., Hamilton	2139	18	5
Morden & Helwig	346 Main St. E., Hamilton	2140	23	5
Koldflow Refrig.	58 Earl St., Hamilton	2141	40	1
Embree Industries	151 Birge St., Hamilton	2142	46	1
Russell T. Kelley	627 Main St. E., Hamilton	2143	91	5
Dells Auto Electric	1044 Cannon St. E., Hamilton	2144	20	3
Royal Oak Dairies Ltd.	225 East Avenue N., Hamilton	2145	124	5
Tim Horton Donuts	65 Ottawa St. N., Hamilton	2147	17	4
Stelco - Frost Works	250 Lottridge St., Hamilton	2148	258	1
Roberts Restaurant	747 King St. E., Hamilton	2149	27	5
Montclair Motors	702 King St. E., Hamilton	2150	22	4
Tweedsmuir School	58 Victoria Ave. N., Hamilton	2151	30	5
Stinson Street School	180 Grant Avenue, Hamilton	2152	22	5
Westinghouse Canada	286 Sanford Ave. N., Hamilton P.O. Box 510	2153	895	1

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 22

Legend - 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Sears	1271 Barton St. E., Hamilton	2201	1,350	4
Coca Cola Ltd.	1575 Barton St. E., Hamilton	2205	158	1
Co-Operators Ins.	1130 Barton St. E., Hamilton	2209	33	5
Canadian General Electric	505 Woodward Ave., Hamilton	2210	28	1
Parkside Plymouth	1600 Main St. E., Hamilton	2211	52	4
Hammant Car	29 Dunbar, Hamilton	2212	33	1
Pollock's Groceteria	276 Kenilworth Ave. N., Hamilton	2213	32	4
S. S. Kresge Co.	1261 Barton St. E., Hamilton	2215	40	4
Dufferin Concrete	1925 Barton St. E., Hamilton	2217	50	1
3V Cleaners	1255 Dunsmure Rd., Hamilton	2219	24	5
Hamilton-Wentworth Credit Union	1320 Barton St. E., Hamilton	2221	42	5
Propak Ltd.	77 Merchison Ave., Hamilton	2222	24	1
J. E. Patterson Furn.	34 Ottawa St. N., Hamilton	2226	40	4
Parkdale School	139 Parkdale Ave. N., Hamilton	2227	25	5
Sir Winston Churchill School	1715 Main St. E., Hamilton	2228	80	5
Delta Collegiate	1284 Main St. E., Hamilton	2229	122	5
St. Helen's Separate School	785 Britannia Ave., Hamilton	2230	24	5
Westinghouse Canada	286 Sanford Ave. N., Hamilton P.O. Box 510	2232	20	1
Dominion Stores	1147 Barton St. E., Hamilton	2234	80	4
Hamilton-Wentworth Police	125 Kenilworth Ave. N., Hamilton	2235	83	5

NAME	ADDRESS	CODE	SIZE	TYPE
City of Hamilton Fire Department	125 Kenilworth Ave. N., Hamilton	2236	78	5
Viscount Montgomery School	1525 Lucerne, Hamilton	2237	30	5
Jockey Club Tavern	1091 Barton St. E., Hamilton	2238	65	5
Union Gas Ltd.	360 Strathearne Ave. N., Hamilton	2240	183	5
Husband Transport Ltd.	1811 Barton St. E., Hamilton	2241	35	5

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 25

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Chedoke McMaster Hospital	Sanatorium Rd. Hamilton	2501	1,274	5
Hillfield-Strathallan School	299 Fennell Ave. W., Hamilton	2502	104	5
Lynwood Hall Children's Centre	526 Upper Paradise Rd., Hamilton	2503	45	5
Mohawk Ford Sales	930 Upper James St., Hamilton P.O. Box 6008, Station E	2504	45	4
Duthler Textiles	602 Upper James St. Hamilton	2505	41	4
Royal Bank of Canada	752 Upper James St., Hamilton	2506	28	5
Westview Public School	60 Rolston Drive, Hamilton	2507	29	5
Chedoke School	500 Bendemere, Hamilton	2508	45	5
Sir Allan MacNab School	145 Magnolia Dr., Hamilton	2509	83	5
Westwood Public School	9 Lynbrook Dr., Hamilton	2510	23	5
Seneca Public School	10 Abbington, Hamilton	2511	29	5
St. Vincent de Paul	130 Columbia Drive, Hamilton	2512	26	5
Dominion Stores	770 Upper James St., Hamilton	2513	59	4
Holbrook School	450 Sanatorium Rd., Hamilton	2514	48	5
Hamilton Psychiatric Hospital	282 Fennell Ave. W., Hamilton P.O. Box 585	2515	795	5
Mohawk College	135 Fennell Ave. W., Hamilton	2516	546	5

LIST OF PARTICIPATING LARGE FIRMS

REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 26

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

NAME	ADDRESS	CODE	SIZE	TYPE
Henderson General Hospital	711 Concession St., Hamilton	2601	1,450	5
Woolco Dept. Store	665 Upper James St., Hamilton	2604	170	4
Mountain Nursing Home	840 Concession St., Hamilton	2605	131	5
Canadian Tire Store	891 Upper James St., Hamilton	2608	110	4
National Bakery	596 Upper Sherman Ave., Hamilton	2610	58	4
Kent Tile & Marble	143 Hester St., Hamilton	2612	28	2
Miracle Food Store	777 Upper James St., Hamilton	2614	100	4
Hamilton Builders Supply	163 Limeridge Rd. E., Hamilton	2615	20	3
Packham Real Estate	534 Upper Sherman Ave., Hamilton	2616	30	5
Day & Campbell	1074 Upper Wellington St., Hamilton	2617	40	1
First Pioneer Holding	386 Upper Gage Ave., Hamilton	2619	17	4
Turkstra Lumber	1050 Upper Wellington St. Hamilton	2621	23	3
Union Gas Ltd.	1020 Upper Wellington St. Hamilton	2622	19	5
Norwood Public School	165 Terrace Drive, Hamilton	2623	40	5
Vern Ames School	205 Berko Dr., Hamilton	2624	18	5
Franklin Road School	500 Franklin Road, Hamilton	2625	31	5
Hill Park Secondary School	465 East 16th St., Hamilton	2627	110	5
Our Lady of Lourdes School	420 Mohawk Rd. E., Hamilton	2628	20	5
St. Thomas More School	150 East 5th St., Hamilton	2629	49	5

NAME	ADDRESS	CODE	SIZE	TYPE
City of Hamilton Fire Dept.	775 Upper Wentworth St., Hamilton	2630	33	5
Postal Station D.	726 Upper Gage Ave., Hamilton	2632	62	5

LIST OF PARTICIPATING LARGE FIRMS
REGION OF HAMILTON-WENTWORTH TRAVEL SURVEY - 1980

ZONE - 30

Legend: 1 - MCW - Manufacturing,
2 - Construction
3 - Wholesale
4 - R - Retail
5 - S - Service
6 - P - Primary

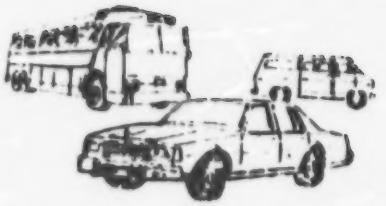
NAME	ADDRESS	CODE	SIZE	TYPE
Parker Consultants Ltd.	1400 Rymal Rd. E., Hamilton	3001	60	5
Hamilton Mountain Bowl	1525 Stone Church Rd. E., Hamilton	3002	50	5
Streets & Sanitation Dept.	1275 Upper Ottawa St., Hamilton	3003	35	5
Edson Packaging Machinery	1308 Rymal Rd. E., Hamilton	3004	38	1
Lancaster Sheet Metal Ltd	195 Hempstead Drive, Hamilton	3005	32	1

LIST OF SUB-SAMPLE EMPLOYERS

EMPLOYER	NUMBER OF EMPLOYEES	SAMPLE SIZE	SAMPLE PERCENTAGE	RETURN RATE	RETURN PERCENTAGE
Stelco	16,500	1,434	8.7	578	40.4
Dofasco	11,000	650	5.9	279	42.9
Westinghouse	2,965	600	20.2	234	39.0
Firestone	1,700	300	17.7	105	35.0
National Steel Car	1,500	300	20.0	124	41.3
Procter & Gamble	875	300	34.3	222	74.0
International Harvester	2,058	725	35.2	311	42.9
General Hospital	1,445	226	15.6	129	57.1
St. Joseph's Hospital	2,019	572	28.3	277	48.4
Chedoke Hospital	1,274	207	16.3	74	35.8
Henderson Hospital	1,489	577	38.8	123	21.3

COMMENTS AND SUGGESTIONS

Thank you for taking the time to fill out this form. It is greatly appreciated. If you have any questions about the survey, please contact the Regional Planning and Development Department by telephoning 525-4181 during business hours.



HAMILTON-WENTWORTH EMPLOYEE TRAVEL SURVEY

Each weekday thousands of people travel by private vehicle or transit to and from work in the Regional Hamilton-Wentworth. The travel often results in the traffic congestion that delays you to work.

In order to improve upon the transportation system in Hamilton-Wentworth, we need to have up to date information on where people live and work, by what means they travel to work, and why they choose that particular method of transportation.

You and your fellow employees are being asked to help by answering the questions on this form. It will take only a few minutes of your time. For transportation planning purposes we need to know the address where you work (not home), however your name or signature are not required. The information you give will be kept in confidence and will not be used by any agency or company other than the Regional Planning Department.

If you would like to make any comments or suggestions for improving transportation in Hamilton-Wentworth please use the space on the back of the form.

Finally, we would like to thank you in advance for your co-operation in this important survey.

[illegible]
[illegible]
[illegible] Department

A-8

Q 6 Please give your home address (where you log in each morning). The information will be treated as confidential

STREET ADDRESS

CITY OR TOWN

PLEASE ANSWER QUESTIONS 7 TO 9 FOR THE TRIP YOU MADE LAST MONDAY TO WORK (OR IF YOU DID NOT GO TO WORK)

Q 7 Where did you arrive at work on your last weekday to work?

ARRIVED AT _____ A.M./P.M. (DAY)

WHICH WERE YOU LEAVE? _____ A.M./P.M.

Q 8 How long did it take to travel to and from work?

TO AND FROM WORK _____ MINUTES WORK TO HOME _____ MINUTES

Q 9 How did you travel to and from work? Please tick the appropriate boxes

If you used more than one means of travel, please number each in the order you took them

HOME TO WORK WORK TO HOME

DRIVE MY CAR DRIVE MY VAN

PASSENGER IN CAR DRIVE MY VAN

TAXI

MOTOR CYCLE

PEDAL CYCLE

WALKED ALL THE WAY

OTHER (Please describe)

Q 10 If you drove a car or other vehicle to and from work please write in the unique reference (Please see the most appropriate answer)

1 NEEDED CAR FOR WORK AT OTHER PLACES DURING THE DAY

2 CAR PARKING AT WORK

3 NEEDED CAR TO TRANSPORT GOODS OR EQUIPMENT

4 NEEDED CAR FOR TRIPS RELATED TO MY EMPLOYMENT

5 TRANSPORTED OTHER PEOPLE IN CAR OR VAN

6 NEEDED CAR FOR SHOPPING OR PERSONAL BUSINESS DURING THE DAY

7 CAR IS THE ONLY AVAILABLE MEANS OF TRANSPORT

8 CAR IS MORE CONVENIENT (CHEAPER) OR PRIVATE THAN OTHERS

9 CAR IS FASTER THAN OTHERS

10 OTHER (Please explain)

Q 11 How many vehicles are there available to the household, including cars?

NUMBER OF CARS

NUMBER OF VANS

Q 12 If you drove a car or other vehicle to work on the day you kept the log, please write in the unique reference number (from the list below) for the most appropriate reason

1 PARKING

2 PARKING (AND TIP)

3 NO PARKING, BUT NEAR A BUS STOP

4 NO PARKING, BUT NEAR A TRAIN

Q 13 If you were a passenger in a vehicle on the day you kept the log to work, please write in the unique reference number (from the list below) for the most appropriate reason

1 DRIVER WOULD NOT LET ME

2 DRIVER DOES NOT HAVE A DRIVER'S LICENCE

3 I DON'T LIKE DRIVING

4 USE A CAR OR VAN FOR WORK (WHERE DRIVER)

5 CAR IS MORE CONVENIENT

6 TRANSPORT ARRANGEMENT BETWEEN HOME AND WORK PLACE

7 TRANSPORT IS RESPONSIVE TO NEEDS

8 OTHER (Please explain)

Q 14 Regardless of how you actually travel to work, how many minutes does it take to walk from your home to the nearest public transport service that you could be using?

MINUTES

PLEASE ANSWER THE FOLLOWING QUESTIONS ABOUT YOURSELF. WE WOULD LIKE TO ASK THESE QUESTIONS ABOUT YOURSELF BECAUSE IT HELPS US TO LOOK AT THE DIFFERENCES BETWEEN THE WORK PEOPLE DO

Q 15 Are you (Please circle) 1 MALE 2 FEMALE

Q 16 Please write the unique reference from the list of categories below. If you are not sure where to place your occupation, look at the job of your boss and describe your job duties.

1 OTHER PROFESSIONAL (Secretary, Bookkeeper, Teller, Medical assist)

2 SALES OR DEPARTMENT MANAGER (Retail sales manager, Loan officer)

3 SERVICE OR CRAFT WORKER (Police, Hairdresser, Maintenance Processor)

4 CONSTRUCTION WORKER (Carpenter, Electrician)

5 OPERATOR OR LABORER (Assembler, Warehouseman, Assembly Line Worker, Mechanic)

6 TRANSPORT WORKER (Truck Driver, Taxi Driver)

7 PROFESSIONAL (Engineer, Nurse, Teacher, Social Worker, Artist)

8 EXECUTIVE AND MANAGERIAL (Owner, Manager, Vice President, Personnel Manager)

9 OTHER (Please describe)

7) [illegible] una sola risposta nella lista che segue quale gruppo di lavoro [illegible] Se non è elencato nella lista [illegible] è elencato sul No. 9 e specificare quale? La vostra risposta

1 IMPIEGATI D'UFFICIO (Segretari, Contabilità, Cassieri, Posta interna)

2 COMMERCIO (Vendita all'ingrosso ed al minuto di ogni genere di merci [illegible] stazioni di servizio autolavaggi)

3 IMPIEGATI ADDETTI AI SERVIZI (Fattorini, camerieri, poliziotti, pompieri [illegible] addetti alla manutenzione)

4 EDILIZIA (Muratori, Assistenti EDIL, Elettricisti)

5 MANIFATTURA (Operai della fonderia, dei depositi, delle catene di montaggio)

6 TRASPORTI (Autisti di linea, autotrasportatori, piloti, ferrovieri)

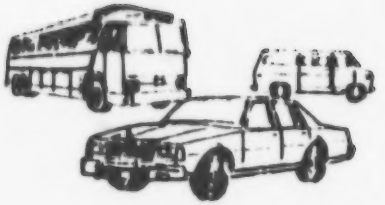
7 PROFESSIONISTI E TECNICI (Medici, Infermieri, Ingegneri, maestri, assistenti sociali, artisti, scienziati)

8 CARICHI DIRETTIVI (Direttori, vice presidenti, capi del personale, ispettori)

9 SE LA VOSTRA OCCUPAZIONE NON E' STATA ELENCATA IN QUESTA LISTA SPECIFICATE QUALE CAMBIO DI LAVORO E' PREVISTO

COMMENTI E SUGGERIMENTI:

Vogliamo ringraziarvi sentitamente per la vostra collaborazione. Se avete domande inerenti questo studio vi preghiamo di telefonare al S.V. [illegible] chiedendo del Signor Edoardo Angelini durante le ore d'ufficio [illegible]



STUDIO DEI MEZZI DI TRASPORTO E DI CIRCOLAZIONE AUTOSTRADALE NELL'AEREA DELLA REGIONE "HAMILTON-WENTWORTH"

Ogni giorno nella regione di Hamilton-Wentworth migliaia di persone si recano al lavoro usando mezzi di trasporto – pubblici o privati – e questo enorme flusso di traffico congestionato, il più delle volte, produce pesanti ritardi

Per migliorare la situazione, abbiamo ritenuto necessario la preparazione di questo studio che ci darà – con le vostre informazioni – la soluzione a questo problema

Vi preghiamo, pertanto, di compilare – in ogni sua parte – l'allegato questionario le informazioni fornite saranno strettamente confidenziali e per l'uso esclusivo di questo ufficio. Non è necessario identificare il vostro nome – il questionario non deve essere firmato

Vogliamo ringraziarvi anticipatamente per la vostra collaborazione nel fornire le informazioni richiestevi per questo studio che, ne siamo [illegible] ci aiuterà a migliorare le condizioni attuali del sistema di trasporto e di circolazione autostradale

D. A. Lyckie
Commissioner
Planning and Development
Direttore del Dipartimento [illegible]

D 1 Questa informazione è direttamente collegata a come si sposta il tragitto tra casa e posto di lavoro

INDIRIZZO _____

CITTÀ _____

CODICE POSTALE _____

PER FAVORE COMPILARE LE DOMANDE RIGUARDANTI DAL 2 AL 7 (SE CI SI RICHIEDONO LE INFORMAZIONI IN MERITO ALLA VOSTRA GIORNATA LAVORATIVA PRECEDENTE LA COMPILAZIONE DEL SEGUENTE QUESTIONARIO)

D 2 Quando è iniziato e quando è terminato il vostro turno di lavoro?

(L'ORARIO) _____ INIZIATO) _____ A.M./P.M. TERMINATO) _____ A.M./P.M.

D 3 Quanto tempo avete impiegato per andare al lavoro e per tornare a casa?

DA CASA AL LAVORO) _____ MINUTI

DAL LAVORO A CASA _____ MINUTI

D 4 Quale mezzo di trasporto avete usato per andare al lavoro e tornare a casa?

Se avete più di un mezzo di trasporto vi preghiamo di dare solo la risposta principale, per esempio se avete guidato la vostra auto sino a raggiungere l'autobus che vi porta al posto di lavoro voi annoterete 'Un guidatore d'auto, camioncino o pullmino marciando No 1 e autobus con il No 3'

	DA CASA AL LAVORO	DAL LAVORO A CASA
GUIDATO L'AUTO, CAMIONCINO O PULLMINO ETC		
PASSEGGERO IN AUTO, CAMIONCINO, PULLMINO		
BUS, AUTOBUS		
CORRIERA COACH		
ANDATO E RITORNATO A PIEDI		
DI SI DIVERSE SE ALTRI MEZZI DI TRASPORTO SONO STATI USATI		

D 5 Se guidate un'auto o un qualsiasi altro veicolo per andare e tornare dal lavoro vi preghiamo di dare anche quella importante ragione questa risposta, marcando con un cerchietto uno dei numeri elencati di seguito

1 L'AUTO MI È NECESSARIA A CAUSA DELLA MIA INVALIDITÀ PER MOTIVI DI SALUTE

2 OFFRO UN PASSAGGIO CON L'AUTO AD ALTRE PERSONE

3 RICEVO LA MOGLIE OD I FIGLI AL LAVORO ED A SCUOLA

4 NEL MIO LAVORO USO L'AUTO PER IL TRASPORTO DI MATERIALE MERCI

5 HO BISOGNO DELL'AUTO PER VIAGGIARE DURANTE LA MIA GIORNATA LAVORATIVA

6 HO BISOGNO DELL'AUTO PER FARE COMPERE DURANTE LA GIORNATA LAVORATIVA

7 L'AUTO È IL SOLO MEZZO DI TRASPORTO A DISPOSIZIONE PER LA FAMIGLIA E PER IL LAVORO

8 L'AUTO È UN COMODO MEZZO DI TRASPORTO [illegible] DISPONIBILE [illegible] DAI MEZZI PUBBLICI DI TRASPORTO

9 L'AUTO È PROVVISORIAMENTE [illegible] DI TRASPORTO

10 NON AVETE ALTRE POSSIBILITÀ

D 6 Quando mezzo di trasporto usano a disposizione per i membri della vostra famiglia?

_____ PRIVATO _____ IN AFFITTO

D 7 Se guidate la vostra auto relativamente al lavoro dove pensate di parcheggiare? (marcate con un cerchietto uno dei numeri elencati di seguito)

1 NELLA STRADA (GRATIS)

2 NELLA STRADA (PARCHIMETRO)

3 NEL PARCHEGGIO COPERTO DI MIA AUTORIMESSA (GRATIS)

4 NEL PARCHEGGIO COPERTO DI MIA AUTORIMESSA (A PAGAMENTO)

D 8 Se qualcuno vi dà un passaggio al lavoro oppure usate i servizi pubblici, indicate di seguito quale con un cerchietto uno dei numeri elencati di seguito

1 NON HO L'AUTO

2 NON HO LA PATENTE DI GUIDA

3 HO L'AUTO MA NON È A MIA DISPOSIZIONE

4 USO L'AUTO E DIVIDO IL COSTO CON ALTRI PASSEGGERI

5 OTTENGO UN PASSAGGIO GRATUITO

6 I SERVIZI PUBBLICI SONO CONVENIENTI PER ANDARE E TORNARE DAL LAVORO

7 I SERVIZI PUBBLICI SONO MENO COSTOSI DELL'AUTO

8 DI SI DIVERSE SE AVETE ALTRI MOTIVI

D 9 [illegible] Quanto tempo impiegate [illegible] alla fermata dell'autobus?

_____ MINUTI

[illegible]

D 10 [illegible]

[illegible] _____ MINUTI

EMPLOYEE TRAVEL SURVEY 1980 - EMPLOYER INTERVIEW

A-10

1. FIRM _____ CODE _____
   POSTAL ADDRESS _____ INTERVIEWER _____
   _____ DATE OF MEETING
   POSTAL CODE _____ _____

2. CONTACT PERSON _____
   TITLE _____
   PHONE # _____

3. DESCRIPTION OF FIRM _____

4. EMPLOYMENT LOCATIONS _____
   _____
   _____

5. EMPLOYMENT — NUMBER BY LOCATION
   1. Clerical
   2. Sales
   3. Service
   4. Construction
   5. Production
   6. Transportation
   7. Professional
   8. Executive
   9. Other (Specify)

6. MALE _____ FEMALE _____

7. PART TIME _____ FULL TIME _____

8. FLEXTIME _____ START _____ FINISH _____

9. LANGUAGES SPOKEN _____

10. VAN POOLING _____

11. PARKING SPACES BY LOCATION _____

12. PARK TO WORK (WALK TIME IN MINUTES) _____

13. ABSENTEEISM RATE (%) _____

14. UNION/NON UNION (CONTACT) _____

15. DATE AND METHOD OF DISTRIBUTION _____

THE HAMILTON-WENTWORTH EMPLOYEE TRAVEL SURVEY

OUR COMPANY HAS BEEN SELECTED TO BE SURVEYED AS PART OF THE REGION OF HAMILTON WENTWORTH EMPLOYEE TRAVEL SURVEY. THE REGION IS TRYING TO GATHER INFORMATION ON TRAVEL PATTERNS SO THAT IT CAN BETTER PLAN FOR THE TRANSPORTATION NEEDS OF EMPLOYEES IN THE REGION. WE HAVE AGREED TO CO-OPERATE IN THIS IMPORTANT SURVEY.

IN THE NEXT FEW DAYS YOU WILL RECEIVE A SHORT QUESTIONNAIRE THAT DEALS WITH YOUR TRIP FROM HOME TO WORK AND BACK AGAIN. TO FILL OUT THE QUESTIONNAIRE WILL TAKE ONLY A FEW MINUTES OF YOUR TIME. IT IS IMPORTANT FOR THE EFFECTIVENESS OF THE SURVEY THAT EACH EMPLOYEE FILL OUT HIS/HER QUESTIONNAIRE.

THANK YOU FOR YOUR CO-OPERATION. PLEASE RETURN THE COMPLETED QUESTIONNAIRE TO

THE HAMILTON-WENTWORTH EMPLOYEE TRAVEL SURVEY

Il DIPARTIMENTO URBANISTICA dell'Hamilton-Wentworth Region sta' preparando uno studio dei mezzi di trasporto e di circolazione autostradale nell'area dell'area della Regione; e la nostra ditta ha acconsentito di collaborare, nel migliore dei modi, per il successo di questo importante studio.

Tra qualche giorno ognuno di voi ricevera' un questionario che dovra' essere compilato in ogni sua parte; saranno necessari solo pochi minuti del vostro tempo affinche' questo studio ottenga un risultato positivo.

Vogliamo, pertanto, ringraziarvi anticipatamente per la vostra collaborazione.

Vi preghiamo di recapitare il questionario compilato presso

.....

THE REGIONAL MUNICIPALITY
OF HAMILTON-WENTWORTH

A-13

ANNE JONES
CHAIRMAN

Each weekday, thousands of people travel to and from work by car, truck or transit in the Region of Hamilton-Wentworth. This travel often results in the traffic congestion and resultant delays that some of us have experienced.

In order to improve upon the transportation system in Hamilton-Wentworth and make the best use of taxpayers' money, we need to have up-to-date information on where people live and work and how they travel to work.

The Regional Planning and Development Department is conducting a travel characteristics study in the fall of 1980, and the survey will take the form of a short questionnaire which would take only three or four minutes for an employee to complete.

The individual responses collected will be kept in the strictest confidence and will be used only for planning purposes.

I would appreciate it if you would consider allowing us to conduct this survey among your employees. I have asked our regional staff to contact you within the next few days to provide you with more information and to answer any questions that you might have. You may also have some suggestions for us with regard to the survey. In any event, any co-operation you could give to us in this connection would certainly be appreciated.

Warmest regards.

Regionally yours,

(Mrs.) Anne H. Jones

100 Main Street East, P.O. Box 910, Hamilton, Ontario L8N 3V9 526-4200

THE REGIONAL MUNICIPALITY
OF HAMILTON-WENTWORTH

A-14

ANNE JONES
CHAIRMAN

I wish to express my appreciation for your participation in the Hamilton-Wentworth Employee Travel Survey.

The co-operation of your company and your employees has helped to ensure that the survey results are representative of the transportation patterns and needs of the more than 200,000 people working in Hamilton-Wentworth. In addition, your assistance in the distribution and collection of the survey questionnaires has brought levels of effectiveness to the project that otherwise would not have been possible.

The survey is scheduled to be completed by the end of the year. At that time the responses of your employees will be analyzed - as well as those of the 400 other participating companies and organizations - to provide us with valuable information for future planning activities. A report on the findings of the Hamilton-Wentworth Employee Travel Survey will be produced early next year.

Thank you for your support.

Regionally yours,

(Mrs.) Anne H. Jones

100 Main Street East, P.O. Box 910, Hamilton, Ontario L8N 3V9 526-4200

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Planning and Development Department
P.O. Box 910, Hamilton, Ontario L8N 3V9

A-15

Refer to File No.
Attention of
Your File No.

September 25, 1980

Hamilton-Wentworth Employee
Travel Survey
Public Service Spot
Radio: 30 seconds

For Reference:
Betty Skoczny
526-4156

For Release: Immediately

Announcer:

Each day, thousands of people travel to and from work in the Region of Hamilton-Wentworth. Occasionally, they are faced with traffic tie-ups that result in delays.

In order to improve the transportation system, the Regional Planning department needs up-to-date information on where people live, work, and how they get to work. A questionnaire will be distributed to select firms in order to get this information.

If you receive such a travel questionnaire at your place of employment, spend a few minutes answering it and help improve our transportation system. A message from the Regional Municipality of Hamilton-Wentworth.

URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

SELECTED RADIO STATIONS

CHML - 848 Main Street East, Hamilton
L8M 1M1
549-2411

CJJD - 2 King Street East, Hamilton
L8P 1A1
526-1280

CKOC - 73 Garfield Avenue South
P.O. Box 1150
Hamilton, L8N 3P5
545-5885

CKDS - FM - 11 Springer Avenue, Hamilton
L8M 2W7
549-2453

CING - FM - 4144 South Service Road, Burlington
681-1079
827-6428

MAJOR UNIONS CONTACTED

1	United Steelworkers
2	United Rubber Workers
3	Canadian Union of Public Employees
4	Teamsters
5	United Glass Workers
6	United Electrical Workers
7	Retail/Wholesale Department Store Union
8	Ontario Nurses Association
9	Public Service Alliance of Canada

A-18

UNITED STEELWORKERS OF AMERICA

AFL - CIO

IN CANADA, AFFILIATED TO THE CANADIAN LABOUR CONGRESS

SUB DISTRICT OFFICE
1031 BARTON STREET EAST
HAMILTON CANADA
L8L 3E3

PHONE
545-3908

DISTRICT NO. 6

F. Stewart Cooke
Director

September 30th, 1980.

TO: Presidents & Recording Secretaries,
Local Union

Dear Sister/Brother:

RE: Hamilton-Wentworth Employee Travel Survey

The Planning and Development Department of Hamilton-Wentworth is conducting a travel survey in our area.

Several thousand questionnaires will be distributed at various plants in order to best determine future transportation needs (copy enclosed).

The input through these questionnaires will provide valuable information and data to aid in the planning of improved methods of transportation, be it private or public.

The working men and women of our industrial areas are most familiar with traffic congestion, poor public transit, etc..

I would urge that you work out with your particular employer the best method of handling the distribution and collection of the questionnaires. I sincerely request the full co-operation of our officers, stewards and committeemen during the next few weeks in order to obtain the maximum results of this programme.

Thanking you in advance for your co-operation.

Yours fraternally,

Wm. F. Scandlan,
Area Co-ordinator.

WFS/hf
encl.

A-19

TEAMSTERS LOCAL UNION No. 879

JOSEPH P. CONTARDI - PRESIDENT
BERNARD R. BEACROFT - SECTY.-TREAS.

412 RENNIE STREET
(At Parkdale)
HAMILTON, ONTARIO, L8H 3P5
TELEPHONE: (416) 547-3231

October 6th, 1980

SENT TO: TEAMSTERS LOCAL No. 879 STEWARDS
DON CARR, GEORGE BOYKO, BILL OSWALD, FRANK LANE
BOB EVANS AND FRANK MURPHY

Dear Sir and Brother:

Re: Hamilton-Wentworth Employee
Travel Survey

The Planning and Development Department of Hamilton-Wentworth is conducting a travel survey in our area.

Several thousand questionnaires will be distributed at various terminals and plants in order to best determine future transportation needs (copy enclosed).

The input through these questionnaires will provide valuable information and data to aid in the planning of improved methods of transportation, be it private or public.

The working men and women of our industrial areas are most familiar with traffic congestion, poor public transit, etc.,

I would urge that you work out with your particular employer the best method of handling the distribution and collection of the questionnaires. I sincerely request the full co-operation of our Stewards during the next few weeks in order to obtain the maximum results of this programme.

Thanking you in advance for your co-operation.

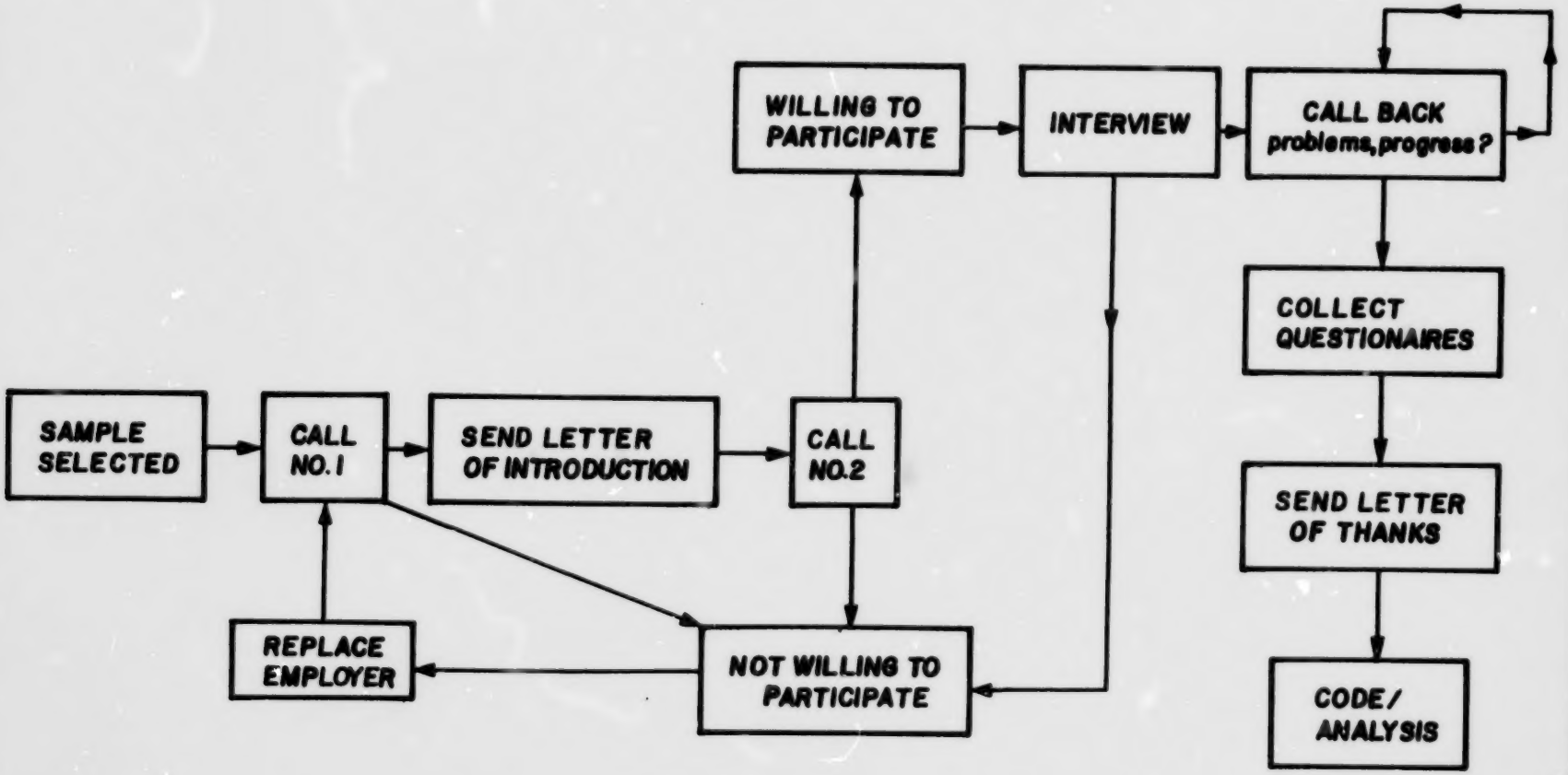
Fraternally,

BRB:rc
Opeiu/343

B. R. BEACROFT
SECRETARY-TREASURER

CONTACT SEQUENCE FLOW CHART

A 20



EMPLOYEE TRAVEL SURVEY 1980
REGIONAL PLANNING DIVISION
PLANNING & DEVELOPMENT DEPARTMENT
HAMILTON-WENTWORTH REGION

1980 TRAVEL SURVEY

STAFF TRAINING SESSION

1.	History of Project to date	-	JOHN WALLER
1.	Explanation of Transportation Planning	-	JOHN BARR
2.	Description of Transportation Planning Work and Projects now being undertaken or under consideration	-	JOHN BARR
3.	Explanation of the administration of the survey	-	DAVID OIKAWA
4.	Questionnaire - description of the relevance of questions	-	BOB GILCHRIST
5.	Explanation of the employer interview form	-	DAVID OIKAWA
6.	Techniques for interview Process	-	JOHN WALLER

****

TRAVEL CHARACTERISTIC EMPLOYMENT END SURVEY

CONTACT ESTABLISHMENT

TELEPHONE SCRIPT FOR TELEPHONE CONTACT ESTABLISHMENT.

GOOD AFTERNOON/MORNING, MY NAME IS JANE CLOHECY, I'M CALLING FROM THE REGION OF HAMILTON-WENTWORTH'S PLANNING DEPARTMENT.

VERIFY THE ADDRESS

PAUSE

THE REGION IS CONDUCTING A TRAVEL SURVEY WHICH WOULD ENABLE THE PLANNING DEPARTMENT TO DETERMINE WHERE EMPLOYEES LIVE, WHERE THEY WORK, AND HOW THEY GET TO WORK.

WE WOULD LIKE TO INCLUDE YOUR FIRM IN OUR SURVEY. WE WILL BE SENDING A FORMAL LETTER OF INTRODUCTION TO YOUR COMPANY EXPLAINING IN DETAIL THE NATURE OF THIS SURVEY.

SHOULD THIS LETTER BE ADDRESSED TO YOURSELF OR IS THERE SOMEONE ELSE THAT WOULD BE MORE APPROPRIATE TO SEND THE LETTER TO:

CHECK SPELLING OF CONTACT PERSON NAME, TELEPHONE #, TITLE & ADDRESS)

THANK YOU VERY MUCH, THE LETTER WILL BE SENT OUT SHORTLY.

TRAVEL CHARACTERISTICS EMPLOYMENT END SURVEY

CALL # 2

GOOD AFTERNOON/MORNING, MY NAME IS_____ I AM CALLING FROM THE REGION OF HAMILTON-WENTWORTH'S PLANNING DEPARTMENT, (ASK FOR CONTACT PERSON)

REPEAT FIRST PARAGRAPH

THE CHAIRMAN OF THE REGION SENT A LETTER TO YOU DESCRIBING THE REGION'S TRAVEL SURVEY HAVE YOU RECEIVED THE LETTER?

(IF NO): "THE LETTER SHOULD ARRIVE IN THE NEAR FUTURE AND WE WILL BE CONTACTING YOU AGAIN"

N.B. AT THIS TIME YOU HAVE TO REFRESH HIS/HER MEMORY AS TO THE LETTER.

IF POSSIBLE, WE WOULD LIKE TO DISCUSS THE SURVEY WITH YOU IN PERSON. THE MEETING WILL PROBABLY TAKE ABOUT 15-20 MINUTES OF YOUR TIME. WOULD IT BE POSSIBLE FOR ME TO ARRANGE AN APPOINTMENT WITH YOU WITHIN THE NEXT FEW DAYS.

GET TIME

THE PERSON CALLING ON YOU WILL BE _____ OF OUR DEPARTMENT.

THANK YOU VERY MUCH FOR YOUR TIME.

BYE-BYE.

EMPLOYEE TRAVEL SURVEY - 1980

EXPLANATION OF EMPLOYER INTERVIEW FORM

QUESTIONS

1 & 2 Should be filled out prior to the interview (to keep writing during the interview to a minimum - very distracting).

3. Q- Is this the only location of the Company in the Region?
Where are the other locations?
Do they have the same functions?

5 & 6 It may be easier to show the form to the employer to make this question easier to fill out.

7. Q - Do all employees start and finish work at the same time?
Need to know starting and finishing times, shifts, if any

8. Should contain a short description of the products or processes that the firm creates or conducts.

9. Q- Is there a significant number of employees at the firm who speak any languages other than English?

10. Q - Is this firm currently operating a van pooling program?
If yes - how is it organized?
- number of vehicles ?
- number of employees involved?

If No - Is the firm interested in creating a program? (distribute literature if requested).

QUESTIONS

11. Q - Does the firm have any parking lots available for employees?

If yes - where are they?
- how many spaces are there at each?
- is parking available to all employees? (type)

12. If the parking lot is not on site .....

Q - how long would it take to walk from the parking lot to the firm? (in minutes)

13. Q - On an average day, how many employees would be absent? (approximate percentage ↳ sickness or holidays).

14. Q Is the firm unionized?

If yes - what are the names and the locals of the Unions involved?

At this point it may be useful to explain the importance of the Union contact.

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Planning and Development Department
P.O. Box 910, Hamilton, Ontario L8N 3V9

A-25

Refer to File No. R.520.23
Attention of
Your File No.

November 12,1980

Dear Sir/Madam:

The Henderson and General Hospitals have been selected to be surveyed as part of the Region of Hamilton-Wentworth Employee Travel Survey. The Region is trying to gather information on travel patterns so that it can better plan for the transportation needs of employees in the Region. Hospital Management have agreed to co-operate in this important survey.

The attached questionnaire deals with your trip from home to work and back again. To fill out the questionnaire will take only a few minutes of your time. It is important for the effectiveness of the survey that each employee fill out his/her questionnaire.

PLEASE WRITE on the questionnaire which hospital you normally work at.

RETURN COMPLETED questionnaire to Mr. E.H. Crabtree at the General or Mr. R. H. Jones at the Henderson.

Thank you for your co-operation.

Yours truly,

John Waller
Planner
Regional Planning Department.

JBW;hk

CONTENTS OF EMPLOYER INTERVIEW

1. INTRODUCTION

   -Ask if employer has received the Chairman's letter

2. EXPLANATION OF PROJECT

   Project Purpose: Sample only — "The purpose of the survey is to enable the Planning Department to gain a better understanding of the nature of the employee's trips to work. The survey involves the distribution of a questionnaire that will take about five minutes of the employee's time. The information gained from the questionnaire will enable the Planning Department to better plan for improvements to the road system and the transit system. As you can imagine, these improvements can be an expensive proposition so it is very important that we get accurate information to aid our transportation planning programs."

3. INTERVIEW FORM (AT THIS TIME OR LATER)

   -As indicated
   -Special mention of need for union co-operation if firm is large or union is strong

4. QUESTIONNAIRE

   -Show employer questionnaire
   -Stress confidentiality of questionnaire
   -Describe questions
   -Describe why we need first question on address - need exact address for traffic zones
   -Sex and occupation

5. DISTRIBUTION

   -Stress need for good response rate
   -Need to ensure that each employee gets <u>one</u> questionnaire
   -Best results to date
      -for large forms - pay envelopes
      -for small forms - personal delivery
   -Ask employer for his advice of how to distribute
   -Need to have survey "talked up" by both the management and the union stewards
   -Set date of distribution and method
   -Set date for call back

6. POSTERS

   -Show employer the poster
   -Ask if there are any places where they can be posted

cont'd...

-Stress that management and the union sign the poster to show that they endorse the survey
-Ask if they have any suggestions that would improve the response

7. THANK THE EMPLOYER!
-Stress need for High Response Rate

DO/ds

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Planning and Development Department
P.O. Box 910, Hamilton, Ontario L8N 3V9

A-27

October 14,1980

Refer to File No. R.520.23
Attention of
Your File No.

MEMORANDUM

TO: C. Metham
B. Skoczny
A. Gerek

FROM: D. Oikawa

RE: Coding of "Employer End Travel Survey" Questionnaire.

GENERAL RULES

This memo outlines the procedures to be used in the coding of the travel survey questionnaire. A number of general rules apply:

(a) All coding should be done with a red pen.

(b) All responses that are not to be keypunched due to errors etc., should be stroked out. (both response and number if both are in error).

(c) Make sure that when a question asks for a response to be included that the number and not the response is circled.

(d) Each coder should keep a separate list for each question on the questionnaire with an "other" option. The responses to the "other" questions should be recorded so that the occurrence of similar responses can be calculated. If a write-in answer in the "other" column occurs, make sure that the number beside "other" is circled.

(e) Where a question asks for a response in minutes, the coder must ensure that the response is in minutes. Where a range of minutes (e.g. 7-11 minutes) is given, an average of the range (e.g. 9 minutes) should be calculated and coded. Only whole numbers are acceptable answers.

.../2

RULES FOR EACH QUESTION

The following rules apply to individual questions.

Q1a) The employers code should be stamped beside question 1 as shown in the attached example.

Q1b) The employees tarm zone should be written below the stamped number in red.

Q.2) - Make sure that the a.m. or p.m. on the question is circled correctly.

- The question "DAY____" should be coded as follows:

Monday - 1, Tuesday - 2, Wednesday - 3, Thursday - 4, Friday - 5, Saturday - 6, Sunday - 7.

Strike out any question responses. Keep a calendar handy to facilitate coding specific dates.

- The question "When did you leave?____" refer to the time the employee left work. If the employee did not understand the question assume that he/she worked an 8 hour day.

Q.4) Ensure that the answers to this question are correct and logical. If only one mode of travel took place on a single trip (one way) no numbers should appear in the columns. A response in the "other" column will often fit into a listed category. The written response should be crossed out and the proper category selected.

Q.5) If this question was answered ensure that the respondent actually was a driver of a vehicle. If he/she was not, cross out the question. A response in the "other" column will often fit into a listed category.

Q.6) If no vehicles are owned or leased then leave the question blank. Any written responses should be coded in a numeric fashion.

Q.7) If the respondent answered this question ensure that he/she was a driver of a vehicle. If he/she was not, cross out the question.

Q.8) If the respondent answered this question ensure that he/she was a passenger in a vehicle, or used transit. An "other" response can frequently be placed in a listed category.

...../3

Q.9) If the respondent indicates that no transit service is available, the question should be coded with a "99",

Q.11) The attached guide may be used as a guide in the coding of occupation types listed in the "other" category.

OTHER ITEMS

1. When questionnaires are received they must be stamped with the employer number A.S.A.P.

2. All questionnaires in which a problem exists, etc., should be kept in a separate pile.

3. In the initial stages, codes, questionnaires should be placed in file folders with the coder's initials on them. The coded questionnaires may be edited.

4. After the questionnaires have been coded (and edited) place an elastic band around pile.

DO;hk.

SAMPLE

Q.1 Please give your home address (where your trip to work normally starts) This information will be treated as confidential

STREET ADDRESS 10 Lionsgate Ave

CITY OR TOWN Hamilton

2608
1243

PLEASE ANSWER QUESTIONS 2 TO 9 FOR YOUR LAST COMPLETE WORKDAY OR SHIFT

Q.2 When did you arrive at work on your last workday or shift?

ARRIVED AT 9:00 (A) P.M. DAY Of Oct. Wednesday 3 1984

WHEN DID YOU LEAVE? 5:45 5:00 A (P) M

Q.3 How long did it take to travel to and from work?

HOME TO WORK 9/12 11 MINUTES, WORK TO HOME 12/5 12 MINUTES

Q.4 How did you travel to and from work? Please check the appropriate means

If you used more than one means of travel, please number each in the order you took them

	HOME TO WORK	WORK TO HOME
DRIVER OF CAR, TRUCK OR VAN	1 ✓	1 ✓
PASSENGER IN CAR, TRUCK OR VAN		
HSR BUS		
GO BUS		
CANADA COACH		
WALKED ALL THE WAY		
OTHER (Please describe)		

Q.5 If you drove a car or other vehicle to and from work, please indicate the major reasons. Please circle most appropriate NUMBERS

1. NEED CAR BECAUSE OF PHYSICAL DISABILITY OR HEALTH PROBLEM
2. DROPPED OFF SPOUSE OR CHILD AT WORK OR SCHOOL
3. NEEDED CAR TO TRANSPORT GOODS OR EQUIPMENT AS PART OF MY JOB
4. NEEDED CAR FOR TRIPS RELATED TO MY JOB DURING THE DAY
5. TRANSPORTED OTHER PEOPLE IN A CAR OR VAN POOL
6. NEEDED CAR FOR SHOPPING OR PERSONAL BUSINESS TRIPS DURING OR AFTER WORK
7. CAR IS THE ONLY AVAILABLE MEANS OF TRANSPORTATION BETWEEN MY HOME AND WORK
8. CAR IS MORE CONVENIENT, COMFORTABLE OR PRIVATE THAN TRANSIT
9. CAR IS FASTER THAN TRANSIT
10. OTHER (Please explain) need for electric appl

Q.6 How many vehicles (cars, trucks, vans) are available to the occupants of your household

One 1 OWNED VEHICLES

none LEASED VEHICLES

Q.7 If you drove a car or other vehicle to work, where did you park? (circle most appropriate NUMBER)

1. ON STREET (FREE)
2. ON STREET (METER)
3. IN PARKING LOT OR GARAGE (FREE)
4. IN PARKING LOT OR GARAGE (PAID) ~~$25 a month~~

Q.8 If you were a passenger in a vehicle or used transit for any part of your trip to work, please indicate the major reasons why. Please circle appropriate NUMBERS

1. DO NOT OWN A CAR
2. DO NOT HAVE A DRIVER'S LICENCE
3. OWN CAR BUT IT WAS NOT AVAILABLE
4. USE A CAR OR VAN POOL (SHARE COSTS WITH OTHER DRIVERS)
5. GET A FREE RIDE TO WORK
6. TRANSIT IS CONVENIENT TO HOME AND/OR WORK PLACE
7. TRANSIT IS LESS EXPENSIVE THAN CAR
8. OTHER (Please explain) _____

Q.9 Regardless of how you actually travel, how many minutes does it take to walk from your home to the nearest public transit service that you can take to work?

1 min 60 MINUTES

TRAVEL IS INFLUENCED BY PERSONAL CHARACTERISTICS. THEREFORE, WE WOULD LIKE TO ASK YOU TWO QUESTIONS ABOUT YOURSELF TO GIVE US A BETTER UNDERSTANDING OF WORK TRAVEL.

Q.10 Your sex (Please circle) 1. MALE 2. FEMALE

Q.11 Please indicate your occupation from the list of categories below. If you are not sure where to place your occupation, circle number 9 (OTHER) and give the title of your job and describe your job duties

1. CLERICAL AND GENERAL OFFICE WORK (Secretary, Bookkeeper, Teller, Mail Carrier)
2. SALES OCCUPATION (Sales of goods or services e.g. cars, insurance)
3. SERVICE OCCUPATION (Shoe Repair, Waiter, Police, Hairdresser, Maintenance Personnel)
4. CONSTRUCTION (Labourer, Foreman, Electrician)
5. PRODUCTION OCCUPATION (Steel Worker, Warehouseman, Assembly Line Worker, Machinist)
6. TRANSPORTATION (Bus/Truck Driver, Pilot, Train Crew)
7. PROFESSIONAL AND TECHNICAL (Engineer, Nurse, Teacher, Social Worker, Artist)
8. EXECUTIVE AND MANAGERIAL (Business Manager, Vice-President, Personnel Manager)
9. OTHER (Please describe) typist

KEYPUNCHING HAMILTON-WENTWORTH TRAVEL SURVEY 1981

A. GENERAL INSTRUCTIONS

1. Keep questionnaires in bundles in same sequence as received.
2. Record no answer or blank columns as ⅛ .
3. Use numeric characters only (except ⅛) and right justify all answers.
4. Record no leading zero's in fields.
5. Specific instructions are outlined below and clarified in attached example.

B. SPECIFIC INSTRUCTIONS

Column Number	Question Number	Instructions
1-4	-	Record four (4) digit number in four (4) column field.
5-8	1	As above.
9-12	2	Record arrival time in four (4) column field e.g. ⅛800.
13	2	Record AM as 1, PM as 2.
14	2	Record Day number e.g. 1 to 7
15-18	2	Record departure time in four(4) column field e.g.⅛500.
19	2	Record AM as 1, PM as 2
20-22	3	Record minutes to work in three (3) column field e.g. ⅛25.
23-25	3	Record minutes to home in three (3) column field e.g. ⅛25.
26-28	4	The various modes are code numbered from 1-7, top to bottom (see example). The first mode taken from HOME TO WORK should be entered in column 26 (it will appear on the questionnaire as a 1 or a check). Subsequent modes taken should be entered in columns 27 and 28 respectively. If only one or two modes were taken record subsequent columns as ⅛. e.g. columns 26=2, 27=3, 28=⅛.
29-31	4	As above from WORK TO HOME e.g. columns 29=3, 30=⅛, 31=⅛.
32-35	5	Record the first circled answer in cloumn 32, the second answer in column 33 etc. Record "no answers"as ⅛. If answer 10 is circled code it as a 0. e.g. 32=2, 33=0, 34=⅛, 35=⅛.
36	6	Record the number of owned vehicles in column 36.
37	6	Record number of leased vehicles in column 37.
38	7	Record circled number in column 38.
39-41	8	Record the first circled answer in column 39, the second column 40 etc. Record "no answers" as ⅛.
43-44	9	Record number of minutes in columns 43-44 e.g. ⅛10.
45	10	Record sex in column 45. 1=Male, 2=Female.
46	11	Record circled number in column 46.

Q.1 Please give your home address (where your trip to work normally starts). This information will be treated as confidential.

STREET ADDRESS 12 Any St

CITY OR TOWN Stony Creek

3921 1 2 3 4

4294 5 6 7 8

PLEASE ANSWER QUESTIONS 2 TO 9 FOR YOUR LAST COMPLETE WORKDAY OR SHIFT

9 10 11 12 13

Q.2 When did you arrive at work on your last workday or shift?

ARRIVED AT 8 00 (A) P.M. DAY Sat 6

WHEN DID YOU LEAVE? 5 00 A M (P.M.)

14 15 16 17 18 19

Q.3 How long did it take to travel to and from work?

HOME TO WORK 25 MINUTES, WORK TO HOME 30 MINUTES

20 21 22

23 24 25

Q.4 How did you travel to and from work? Please check the appropriate means.

If you used more than one means of travel, please number each in the order you took them.

	HOME TO WORK	WORK TO HOME
1 DRIVER OF CAR, TRUCK OR VAN		
2 PASSENGER IN CAR, TRUCK OR VAN	1	
3 HSR BUS	2	1
4 GO BUS		
5 CANADA COACH		
6 WALKED ALL THE WAY		
7 OTHER (Please describe)		

26 27 28

29 30 31

Q.5 If you drove a car or other vehicle to and from work, please indicate the major reasons. Please circle most appropriate NUMBERS.

1. NEED CAR BECAUSE OF PHYSICAL DISABILITY OR HEALTH PROBLEM
2. (2) DROPPED OFF SPOUSE OR CHILD AT WORK OR SCHOOL
3. NEEDED CAR TO TRANSPORT GOODS OR EQUIPMENT AS PART OF MY JOB
4. NEEDED CAR FOR TRIPS RELATED TO MY JOB DURING THE DAY
5. TRANSPORTED OTHER PEOPLE IN A CAR OR VAN POOL
6. NEEDED CAR FOR SHOPPING OR PERSONAL BUSINESS TRIPS DURING OR AFTER WORK
7. CAR IS THE ONLY AVAILABLE MEANS OF TRANSPORTATION BETWEEN MY HOME AND WORK
8. CAR IS MORE CONVENIENT, COMFORTABLE OR PRIVATE THAN TRANSIT
9. CAR IS FASTER THAN TRANSIT
10. (10) OTHER (Please explain) Take car to garage

32 33 34 35

Q.6 How many vehicles (cars, trucks, vans) are available to the occupants of your household.

2 OWNED VEHICLES

0 LEASED VEHICLES

36

37

Q.7 If you drove a car or other vehicle to work, where did you park? (circle most appropriate NUMBER)

1. ON STREET (FREE)
2. (2) ON STREET (METER)
3. IN PARKING LOT OR GARAGE (FREE)
4. IN PARKING LOT OR GARAGE (PAID)

38

Q.8 If you were a passenger in a vehicle or used transit for any part of your trip to work, please indicate the major reasons why. Please circle appropriate NUMBERS.

1. DO NOT OWN A CAR
2. DO NOT HAVE A DRIVER'S LICENCE
3. OWN CAR BUT IT WAS NOT AVAILABLE
4. USE A CAR OR VAN POOL (SHARE COSTS WITH OTHER DRIVERS)
5. GET A FREE RIDE TO WORK
6. TRANSIT IS CONVENIENT TO HOME AND/OR WORK PLACE
7. TRANSIT IS LESS EXPENSIVE THAN CAR
8. OTHER (Please explain) _____

39 40 41

Q.9 Regardless of how you actually travel, how many minutes does it take to walk from your house to the nearest public transit service that you can take to work?

10 MINUTES

42 43 44

TRAVEL IS INFLUENCED BY PERSONAL CHARACTERISTICS. THEREFORE, WE WOULD LIKE TO ASK YOU TWO QUESTIONS ABOUT YOURSELF TO GIVE US A BETTER UNDERSTANDING OF WORK TRAVEL.

45

Q. 10 Your sex (Please circle) 1. MALE (2) FEMALE

Q.11 Please indicate your occupation from the list of categories below. If you are not sure where to place your occupation, circle number 9 (OTHER) and give the title of your job and describe your job duties

1. CLERICAL AND GENERAL OFFICE WORK (Secretary, Bookkeeper, Teller, Mail Carrier)
2. (2) SALES OCCUPATION (Sales of goods or services e.g. cars, insurance)
3. SERVICE OCCUPATION (Shoe Repair, Waiter, Police, Hairdresser, Maintenance Personnel)
4. CONSTRUCTION (Labourer, Foreman, Electrician)
5. PRODUCTION OCCUPATION (Steel Worker, Warehouseman, Assembly Line Worker, Machinist)
6. TRANSPORTATION (Bus/Truck Driver, Pilot, Train Crew)
7. PROFESSIONAL AND TECHNICAL (Engineer, Nurse, Teacher, Social Worker, Artist)
8. EXECUTIVE AND MANAGERIAL (Business Manager, Vice-President, Personnel Manager)
9. OTHER (Please describe) _____

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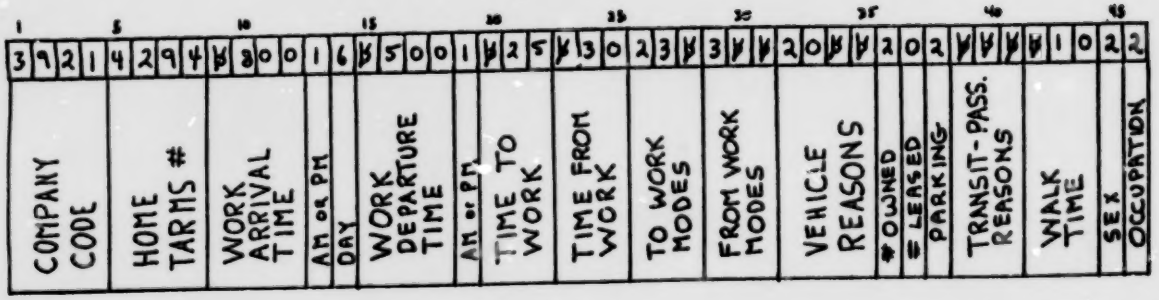
KEYPUNCHING EXAMPLE*
HAMILTON - WENTWORTH TRAVEL SURVEY 1981



* SEE ATTACHED QUESTIONAIRE

LARGE EMPLOYER UNIVERSE AND ACTUAL SAMPLE

EMPLOYER TYPE

MACRO TRAFFIC ZONE 7

NUMBER OF EMPLOYEES

UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	10 5	4 3	11 11	- -	25 19
100-299	2 2	1 -	1 -	1 -	5 2
300-499	- -	- -	- -	- -	- -
500 +	- -	- -	- -	- -	- -
TOTAL	12 7	5 3	12 11	1 -	30 21

EMPLOYER TYPE

MACRO TRAFFIC ZONE 8

NUMBER OF EMPLOYEES

UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	- -	1 2	1 3	- -	2 5
100-299	- -	- -	1 -	- -	1 -
300-499	- -	- -	- -	- -	- -
500 +	- -	- -	- -	- -	- -
TOTAL	- -	2 2	3 3	- -	3 5

LARGE EMPLOYER UNIVERSE AND ACTUAL SAMPLE

EMPLOYER TYPE — MACRO TRAFFIC ZONE 10

NUMBER OF EMPLOYEES

UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	3 2	1 1	2 1	– –	6 4
100-299	– –	– –	– –	– –	– –
300-499	– –	– –	– –	– –	– –
500 +	– –	– –	– –	– –	– –
TOTAL	3 2	1 1	2 1	– –	6 4

EMPLOYER TYPE — MACRO TRAFFIC ZONE 14

NUMBER OF EMPLOYEES

UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	10 7	2 1	6 6	– –	18 14
100-299	1 1	– –	– –	– –	1 1
300-499	– –	– –	– –	– –	– –
500 +	– –	– –	– –	– –	– –
TOTAL	11 8	2 1	6 6	– –	19 15

LARGE EMPLOYER UNIVERSE AND ACTUAL SAMPLE

EMPLOYER TYPE

MACRO TRAFFIC ZONE 18

NUMBER OF EMPLOYEES UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	36 10	36 10	149 11	- -	221 31
100-299	16 6	8 4	27 14	- -	51 24
300-499	1 -	1 -	5 2	- -	7 2
500 +	3 1	1 1	5 1	- -	9 3
TOTAL	56 17	46 15	186 28	- -	288 60

EMPLOYER TYPE

MACRO TRAFFIC ZONE 20

NUMBER OF EMPLOYEES UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	79 9	5 3	26 6	- -	110 18
100-299	35 10	2 2	3 2	- -	40 14
300-499	5 1	- -	- -	- -	5 1
500 +	14 11	- -	- -	- -	14 11
TOTAL	133 31	7 5	29 8	- -	169 44

LARGE EMPLOYER UNIVERSE AND ACTUAL SAMPLE

EMPLOYER TYPE

MACRO TRAFFIC ZONE 21

NUMBER OF EMPLOYEES

UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	34 7	26 8	82 7	- -	142 22
100-299	15 5	- -	7 1	- -	22 6
300-499	2 2	- -	2 1	- -	4 3
500 +	4 3	- -	2 2	- -	6 5
TOTAL	55 17	26 8	93 11	- -	174 36

EMPLOYER TYPE

MACRO TRAFFIC ZONE 22

NUMBER OF EMPLOYEES

UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	13 5	18 6	49 11	- -	80 22
100-299	3 1	1 -	6 3	- -	10 4
300-499	2 -	- -	- -	- -	2 -
500 +	- -	1 1	1 -	- -	2 1
TOTAL	18 6	20 7	56 14	- -	94 27

LARGE EMPLOYER UNIVERSE AND ACTUAL SAMPLE

EMPLOYER TYPE — MACRO TRAFFIC ZONE 25

NUMBER OF EMPLOYEES (UNIVERSE / ACTUAL SAMPLE)	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	2 -	5 3	26 9	- -	33 12
100-299	- -	- -	1 1	- -	1 1
300-499	- -	- -	- -	- -	- -
500 +	- -	- -	2 3	- -	2 3
TOTAL	2 -	5 3	29 13	- -	36 16

EMPLOYER TYPE — MACRO TRAFFIC ZONE 26

NUMBER OF EMPLOYEES (UNIVERSE / ACTUAL SAMPLE)	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	7 5	9 2	29 9	- -	55 16
100-299	- -	4 2	3 2	- -	7 4
300-499	=	=	=	=	=
500 +	- -	- -	4 1	- -	4 1
TOTAL	7 5	13 4	46 12	- -	66 21

LARGE EMPLOYER UNIVERSE AND ACTUAL SAMPLE

EMPLOYER TYPE

MACRO TRAFFIC ZONES 30

NUMBER OF EMPLOYEES

UNIVERSE ACTUAL SAMPLE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	4 2	– –	4 3	– –	8 5
100-299	– –	– –	– –	– –	– –
300-499	– –	– –	– –	– –	– –
500 +	– –	– –	– –	– –	– –
TOTAL	4 2	– –	4 3	– –	8 5

N.B. IN SOME CASES THE ACTUAL SAMPLE IN A PARTICULAR CELL MAY BE GREATER THAN THE UNIVERSE. THIS IS DUE TO DIFFERENCES PERCEIVED AND ACTUAL FIRM SIZE.

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

MACRO TRAFFIC ZONES 1

NUMBER OF EMPLOYEES	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	2	-	2	-	4
100-299	-	-	-	-	-
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	2	-	2	-	4

EMPLOYER TYPE

MACRO TRAFFIC ZONES 2

NUMBER OF EMPLOYEES	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	1	-	1	-	2
100-299	-	-	1	-	1
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	1	-	2	-	3

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

MACRO TRAFFIC ZONES 3

NUMBER OF EMPLOYEES UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	-	-	2	-	2
100-299	-	-	-	-	-
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	-	-	2	-	2

EMPLOYER TYPE

MACRO TRAFFIC ZONES 4

NUMBER OF EMPLOYEES UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	3	-	4	-	7
100-299	-	-	-	-	-
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	3	-	4	-	7

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

MACRO TRAFFIC ZONES 5

NUMBER OF EMPLOYEES UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	3	-	3	-	6
100-299	-	-	-	2	2
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	3	-	3	2	8

EMPLOYER TYPE

MACRO TRAFFIC ZONES 6

NUMBER OF EMPLOYEES UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	-	-	-	-	-
100-299	-	-	1	-	1
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	-	-	1	-	1

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

MACRO TRAFFIC ZONES 9

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	-	-	-	-	-
100-299	-	-	-	-	-
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	-	-	-	-	-

EMPLOYER TYPE

MACRO TRAFFIC ZONES 10

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	3	1	2	-	6
100-299	-	-	-	-	-
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	3	1	2	-	6

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

MACRO TRAFFIC ZONES 11

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	-	-	-	-	-
100-299	-	-	-	-	-
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	-	-	-	-	-

EMPLOYER TYPE

MACRO TRAFFIC ZONES 12

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	-	-	1	1	2
100-299	-	-	-	-	-
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	-	-	1	1	2

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE — MACRO TRAFFIC ZONES 13

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	1	-	-	1	2
100-299	-	-	-	-	-
300-499	-	-	-	-	-
500 +	-	-	-	-	-
TOTAL	1	-	-	1	2

EMPLOYER TYPE — MACRO TRAFFIC ZONES 19

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	6	-	11	-	17
100-299	2	-	3	-	5
300-499	1	-	-	-	1
500 +	-	-	-	-	-
TOTAL	9	-	14	-	23

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

MACRO TRAFFIC ZONES 23

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	39	8	33		80
100-299	6	4			10
300-499	3				3
500 +	1				1
TOTAL	49	12	33		94

EMPLOYER TYPE

MACRO TRAFFIC ZONES 24

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	1		3		4
100-299					
300-499					
500 +					
TOTAL	1		3		4

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

MACRO TRAFFIC ZONES 27

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	1	6	13		20
100-299		1			1
300-499					
500 +					
TOTAL	1	7	13		21

EMPLOYER TYPE

MACRO TRAFFIC ZONES 28

NUMBER OF EMPLOYEES

UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	1	1	1		3
100-299					
300-499					
500 +					
TOTAL	1	1	1		3

A 29a

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

MACRO TRAFFIC ZONES 29

NUMBER OF EMPLOYEES UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	4	2	2		8
100-299					
300-499					
500 +					
TOTAL	4	2	2		8

LARGE EMPLOYER UNIVERSE FOR MACRO ZONES NOT SAMPLED

EMPLOYER TYPE

TOTAL UNSAMPLED MACRO TRAFFIC ZONES

NUMBER OF EMPLOYEES UNIVERSE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	65	18	78	2	163
100-299	8	5	5	2	20
300-499	4	-	-	-	4
500 +	1	-	-	-	1
TOTAL	78	23	83	4	188

LARGE EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

EMPLOYER TYPE

MACRO TRAFFIC ZONE 7

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	256 109 43%	253 76 30%	432 238 55%	- - -	941 423 45%
100-299	404 192 48%	- - -	- - -	- - -	404 192 48%
300-499	- - -	- - -	- - -	- - -	- - -
500 +	- - -	- - -	- - -	- - -	- - -
TOTAL	660 301 45%	253 76 30%	432 238 55%	- - -	1345 615 46%

EMPLOYER TYPE

MACRO TRAFFIC ZONE 8

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	- - -	54 35 65%	217 162 75%	- - -	271 197 73%
100-299	- - -	- - -	- - -	- - -	- - -
300-499	- - -	- - -	- - -	- - -	- - -
500 +	- - -	- - -	- - -	- - -	- - -
TOTAL	- - -	54 35 65%	217 162 75%	- - -	271 197 73%

LARGE EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

EMPLOYER TYPE — MACRO TRAFFIC ZONE 10

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	80 50 63%	50 17 34%	23 19 83%	- - -	153 86 56%
100-299	- - -	- - -	- - -	- - -	- - -
300-499	- - -	- - -	- - -	- - -	- - -
500 +	- - -	- - -	- - -	- - -	- - -
TOTAL	80 50 63%	50 17 34%	23 19 83%	- - -	153 86 56%

EMPLOYER TYPE — MACRO TRAFFIC ZONE 14

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	268 156 58%	26 12 46%	330 193 58%	- - -	624 336 57%
100-299	270 167 62%	- - -	- - -	- - -	270 167 62%
300-499	- -	- -	- -	- -	- -
500 +	- - -	- - -	- - -	- - -	- - -
TOTAL	538 323 60%	26 12 46%	330 193 58%	- - -	894 528 59%

LARGE EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

EMPLOYER TYPE — MACRO TRAFFIC ZONE 18

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	421 272 67%	416 196 47%	405 294 73%	- - -	1242 762 61%
100-299	743 334 45%	613 245 40%	2675 1338 50%	- - -	1031 1917 48%
300-499	- - -	- - -	760 251 33%	- - -	760 251 33%
500 +	580 413 71%	700 84 12%	534 464 87%	- - -	1814 961 53%
TOTAL	1744 1019 59%	1729 525 30%	4374 2347 54%	- - -	7847 3891 50%

EMPLOYER TYPE — MACRO TRAFFIC ZONE 20

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	343 181 53%	220 136 62%	237 171 72%	- - -	800 488 60%
100-299	1845 533 29%	223 117 52%	202 94 47%	- - -	2270 744 33%
300-499	350 146 42%	- - -	- - -	- - -	350 146 42%
500 +	5091 2547 50%	- - -	- - -	- - -	5791 2547 50%
TOTAL	8329 3407 41%	443 253 57%	439 265 57%	- - -	9211 3925 43%

LARGE EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

EMPLOYER TYPE — MACRO TRAFFIC ZONE 21

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	315 185 59%	208 131 63%	186 119 64%	- - -	709 435 61%
100-299	858 244 28%	- - -	160 48 30%	- - -	1018 292 29%
300-499	385 124 32%	- - -	350 100 29%	- - -	735 324 30%
500 +	1131 184 16%	- - -	897 277 31%	- - -	2028 461 23%
TOTAL	2689 737 27%	208 131 63%	1593 544 34%	- - -	4490 1412 31%

EMPLOYER TYPE — MACRO TRAFFIC ZONE 22

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	155 70 45%	279 177 63%	520 350 67%	- - -	954 597 63%
100-299	158 134 94%	- - -	665 276 42%	- - -	993 410 41%
300-499	- - -	- - -	- - -	- - -	- - -
500 +	- - -	1350 562 42%	- - -	- - -	1350 562 42%
TOTAL	313 204 65%	1629 739 45%	1185 626 53%	- - -	3127 1569 50%

LARGE EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

EMPLOYER TYPE

MACRO TRAFFIC ZONE 25

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	-	145	356	-	501
	-	81	256	-	337
	-	56%	72%	-	67%
100-299	-	-	104	-	104
	-	-	60	-	60
	-	-	58%	-	58%
300-499	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
500 +	-	-	1548	-	1548
	-	-	877	-	877
	-	-	57%	-	57%
TOTAL	-	145	2008	-	2153
	-	81	1193	-	1274
	-	56%	59%	-	59%

EMPLOYER TYPE

MACRO TRAFFIC ZONE 26

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	161	124	302	-	587
	76	56	262	-	334
	47%	45%	67%	-	57%
100-299	-	280	239	-	531
	-	76	123	-	199
	-	27%	52%	-	37%
300-499	-	-	-	-	-
	-	-	-	-	-
	-	-	-	-	-
500 +	-	-	577	-	577
	-	-	123	-	123
	-	-	21%	-	21%
TOTAL	161	404	1118	-	1683
	76	132	448	-	656
	47%	33%	40%	-	39%

LARGE EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

EMPLOYER TYPE

MACRO TRAFFIC ZONES 30

NUMBER OF EMPLOYEES

SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	70 48 69%	- - -	145 60 41%	- - -	215 108 50%
100-299	- - -	- - -	- - -	- - -	- - -
300-499	- - -	- - -	- - -	- - -	- - -
500 +	- -	- -	- -	- -	- -
TOTAL	70 48 69%	- - -	145 60 41%	- - -	215 108 50%

LARGE EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

NUMBER OF EMPLOYEES	EMPLOYER TYPE			TOTAL SAMPLED MACRO TRAFFIC ZONES	
SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
20-99	2069 1147 55%	1778 917 52%	3153 2064 65%	- - -	7000 4128 59%
100-299	4278 1604 38%	1126 438 39%	4045 1939 48%	- - -	9449 3981 42%
300-499	735 270 37%	- - -	1110 351 32%	- - -	1845 621 34%
500 +	7502 3144 42%	2005 646 32%	3556 1741 49%	- - -	13063 5531 42%
TOTAL	14584 6165 42%	4899 2001 41%	11786 6037 51%	- - -	31402 14261 45%

SMALL EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

EMPLOYER TYPE

MACRO TRAFFIC ZONE	SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
	1	2 2 100%				2 2 100%
	2	1 1 100%				1 1 100%
	3			5 4 80%		5 4 80%
	4			8 8 100%		8 8 100%
	5	10 4 40%		5 4 80%		15 8 54%
	6	6 6 100%				6 6 100%
	7		3 3 100%	1 1 100%		4 4 100%
	8					0
	9	17 15 88%				17 15 88%
	10					0
	11			1 1 100%		1 1 100%
	12					0
	13					0
	14					0
	15		8 5 63%			8 5 63%

SMALL EMPLOYER - EMPLOYEE SAMPLE AND RESPONSE

EMPLOYER TYPE

MACRO TRAFFIC ZONE SAMPLE RESPONSE PERCENTAGE	MANUFACTURING CONSTRUCTION WHOLESALE	RETAIL	SERVICE	PRIMARY	TOTAL
16		6 4 67%	2 2 100%		8 6 75%
17			7 7 100%		7 7 100%
18		18 18 100%	51 28 55%		69 46 67%
19	3 3 100%	4 4 100%			7 7 100%
20	3 2 67%	4 4 100%	3 3 100%		10 9 90%
21	5 4 80%	29 23 79%	30 27 90%		64 54 84%
22		9 6 67%	43 35 81%		52 41 79%
23	9 3 34%		3 3 100%		12 6 50%
24					0
25		11 7 64%	10 9 90%		21 16 76%
26		15 11 74%	18 16 89%		33 27 82%
27		2 2 100%			2 2 100%
28					0
29					0
30					0
TOTAL	56 40 71%	109 87 80%	187 148 79%		352 275 78%

RELIABILITY OF SAMPLE SIZE (CONFIDENCE LEVEL)

	SAMPLE (n)	UNIVERSE (N)	† VALUE	CONFIDENCE LIMIT
A Large Firm Sample	336	1,240	4.3	99.9%
B Small Firm Sample	108	7,882	2.1	97.9%
C Total Firm Sample	444	9,122	4.3	99.9%
D Total Employee Sample	32,000	200,000	39.0	99.99%

Reliability (confidence level) is estimated by the following expression:

$$t = \sqrt{\frac{n\,Ne^2}{PQ\,(N-n)}}$$

Where † is a value which can be equated to a percentage confidence level

Where N is total population (universe)

Where n is total sample

Where e is the tolerance error assumed to be 10%

Where P and Q measure the variation in responses, maximum variation is assumed (P = .5, Q= .5).

BIAS ++(NON SAMPLING ERROR)

		RESPONSE RATE % W1	NON RESPONSE RATE % W2	BIAS-NON SAMPLING ERROR ESTIMATE
A	Large Firms*	74	26	2.6
	Employees+	45	55	5.5
B	Small Firms*	72	28	2.8
	Employees+	79	21	2.1
C	Total Firms*	74	26	2.6
	Employees+	46	54	5.4

* Percentage of circulated firms who responded

\+ Percentage of circulated employees who responded

++ BIAS (non sampling error) is estimated by the following expression

$$BIAS = (W1\ P1 + W2\ P2) - P1$$

where P1 is the sample mean in responses (assumed P1 = 9)

where P2 is the sample mean in non responses (assumed P2 = 1)

where W1 is response rate

where W2 is non response rate

Volume

2

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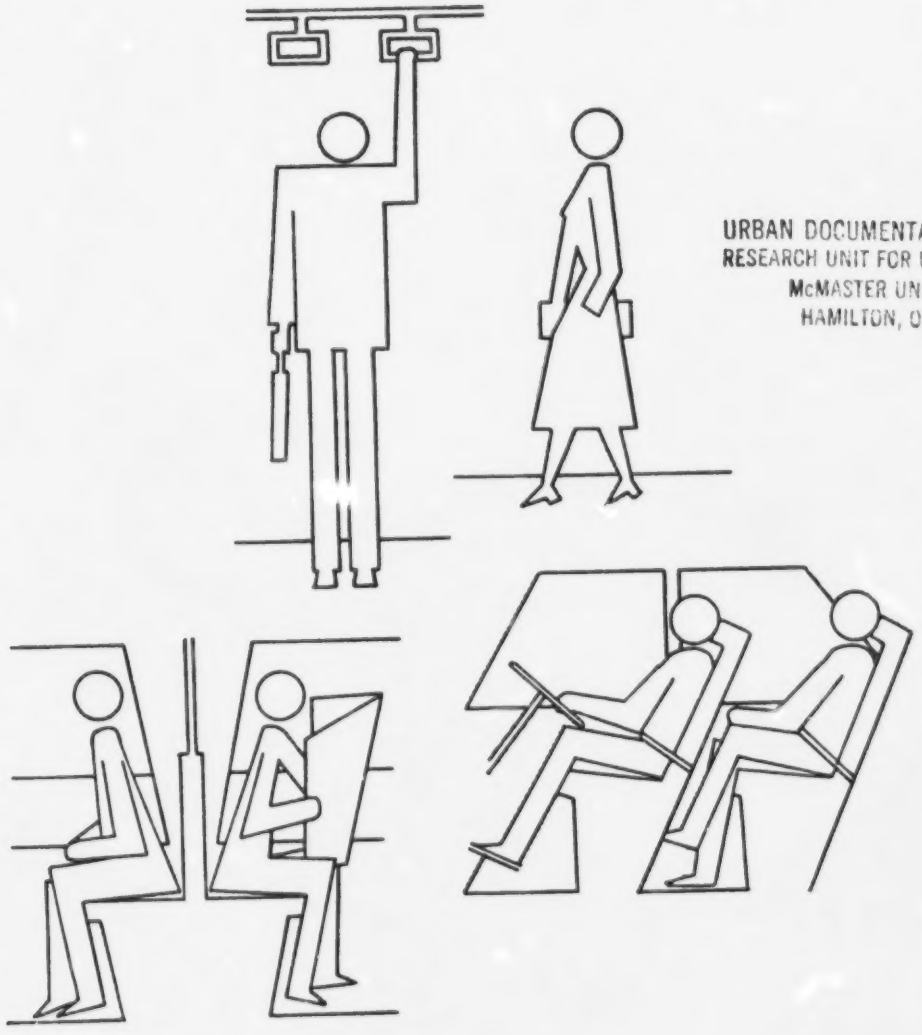
EMPLOYEE TRAVEL SURVEY



URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

VOLUME 2
ANALYSIS AND CONCLUSIONS

Hamilton-Wentworth
Planning and Development
Department

Nov. 1983

EMPLOYEE TRAVEL SURVEY

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PLANNING AND DEVELOPMENT DEPARTMENT
THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH
NOVEMBER 1983

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SUMMARY

The Employee Travel Survey provides information on the travel habits and travel patterns of persons working in the many firms and industries in the Hamilton-Wentworth Region. The information from the survey is used to analyze existing and future improvements required to transportation facilities and services provided by Municipal, Regional and Provincial governments.

The survey was conducted and analyzed by Hamilton-Wentworth staff under a funding agreement with the Provincial Ministry of Transportation and Communications. This survey is one of a number of travel characteristics surveys conducted by the Regional Municipalities in southern Ontario to provide a comprehensive data base on travel habits and travel patterns. This survey is unique in Hamilton-Wentworth since it is the first time that travel data was collected from employees at their place of work.

Questionnaires were distributed to a stratified sample of employees at their place of employment. The sample represents employees of selected firms in representative geographic areas. The final survey sample contains over 14,000 completed questionnaires representing approximately seven percent (7%) of all persons employed in Hamilton-Wentworth.

The returned questionnaires were edited and analyzed to determine the travel characteristics and travel patterns. The output of the survey analysis was examined to identify the potential of establishing or revising Regional policies to reduce congestion and improve service on the road and transit systems.

The major findings of the survey analysis follow:

1. Peak demands on the transportation systems coincide with the average starting and finishing times at places of employment. In downtown Hamilton, the peaks occur at 8:00 to 9:00 a.m. and 4:30 to 5:30 p.m. and travel is sharply peaked. In the Bayfront Industrial area, the peaks are at 6:30 to 7:30 a.m. and 3:30 to 4:30 p.m. with secondary peaks occurring around the 11:00 p.m. shift change.

2. The average travel time to work has increased substantially since the last comprehensive travel survey was done in 1974, with the average travel time to work now measuring 23 minutes. This increase in travel time reflects the continued development of suburban areas and an increase in commuting from places of residence outside the Region.

3. The use of the private automobile for work travel has increased in importance since 1974 despite substantial increases in the price of fuel. Since the last survey, the percentage of people who drive their own car to work has increased, the percentage of people who travel as auto passengers has decreased and the percentage of people who ride transit has remained unchanged.

4. The majority (75%) of people who travel to work on transit can be classified as captive riders since they do not have the option of travelling by auto. Of the 25% who choose transit over private auto, half do so because of cost and half do so because of convenience.

5. Over fifty percent (50%) of the people who travel to work in private autos can be classified as captive auto riders and would not choose to use transit if it were available. Of those who choose to use autos over transit, the majority do so because they find auto use faster and more convenient than transit.

6. Average car ownership for families of employees who travel to work by auto is sigificantly higher than for families of employees who use transit. Any changes in transit service to attract auto users must be in place for a long enough time to influence auto ownership decisions.

7. The rate of transit usage by employees in downtown Hamilton is significantly higher than in any other employment area. Although the Bayfront Industrial area has more employees than the downtown, the rate of transit usage there is less than one third of the rate in the downtown area. There is a significant potential to attract additional transit ridership by improving transit service to the Bayfront area.

8. A large number of people who are employed in Hamilton-Wentworth commute from residential areas in other regions. This is especially true of Burlington residents who commute to downtown Hamilton and the Bayfront Industrial area.

The information from the Employee Travel Survey was used to evaluate a number of transportation policy areas. The major conclusions follow:

- The Urban Transit Service Area, in which transit services is funded on the basis of equalized assessment, should be reviewed with the objective of better reflecting work trip patterns.

- The orientation of transit routes should be revised with the objective of increasing direct accessibility to all major employment areas. There appears to be significant potential for improving accessibility to the Bayfront Industrial area.

- The proposed GO ALRT system to extend GO Rail service into Hamilton, should be implemented in a manner that best accommodates travel to places of employment in downtown Hamilton.

- Express transit service from both downtown Hamilton and the Bayfront Industrial area to suburban residential areas has the potential of attracting a large number of commuters who now use autos.

- Flexible work hours programs have a limited potential to reduce peak hour traffic into downtown Hamilton. The Region should encourage larger firms in the downtown to promote flexible work hour programs. The potential impact of flexible work hours in the Bayfront area is limited because of the prevalence of shift operations at large plants.

- Car and van pooling programs have a limited potential to reduce traffic congestion in the Bayfront Industrial area and efforts to promote such programs should be continued.

- A system of bicycle paths cannot be justified solely on the basis of work travel. However, if a bicycle path system were to be implemented for recreational or other purposes, efforts should be made to provide connections to downtown Hamilton and the major shopping centres and educational institutions.

More detailed analyses of the survey data has been used as input into the on-going studies of the GO ALRT connection to Hamilton and the Hamilton Street Railway transit systems studies. The survey data will be used as input into the analysis of specific transit, traffic or parking studies and can also be used to assess traffic impacts of future industrial, commercial or institutional development.

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1.0 INTRODUCTION

The Hamilton-Wentworth Planning and Development Department maintains a data base on traffic patterns and travel characteristics to be used in analyzing existing and future roadway and transit requirements. The most recent comprehensive information on travel characteristics was collected in 1974 and it was necessary to collect more current data to provide a better data base for analysis.

The purpose of the survey was to collect information on the work trip travel characteristics and travel patterns of persons employed within the Region of Hamilton-Wentworth.

This report is the second of a series of two which deal with the Employee Travel Survey. Volume 1 - Survey and Results - produced in June, 1981, outlines the purpose, sampling procedure, survey methodology and statistical validity of the sample. Volume 2 briefly reviews the methodology, and focuses on the data analysis and results. It describes data processing steps, factoring procedures, sample verification, production of tabulations, the resulting travel characteristics information, and the implications for specific policies or policy options.

URBAN DOCUMENTATION CENTRE
RESEARCH UNIT FOR URBAN STUDIES
McMASTER UNIVERSITY
HAMILTON, ONTARIO

2.0 SURVEY PROCESS

The basic steps involved in the Employee Travel Survey are summarized in the flow chart in Exhibit 2.1 and are briefly described below.

2.1 SURVEY SAMPLING TECHNIQUES

It was not feasible to survey the entire universe of employees in the Region. Therefore, a methodology was developed for selecting a sample representative of the total universe, as described in detail in Chapter 2 of the Volume 1 report.

Because there was not one comprehensive inventory of all employers in the Region, two separate listings were derived from a number of available sources; one for large firms with 20 or more employees, and one for small firms with fewer than 20 employees. These two categories of employers were surveyed and analyzed separately.

From each of the listings of firms, a representative sample of employers was selected. A stratified sampling technique was used to ensure a valid sampling of key subgroups according to geographic location, firm size and firm activity type, as described in Appendix A.

To make sampling as efficient as possible, 11 key zones (as shown in Exhibit 2.2) were selected for the sampling of large firms. These zones represent each of the major types of land use activity in Hamilton-Wentworth including urban, suburban, and rural zones, as well as the unique employment zones of Downtown Hamilton and the Bayfront industrial area. Small firms, on the other hand, were sampled randomly throughout all 30 zones in the Region.

All employees in the selected firms were surveyed, where possible. For some large firms, a sub-sample of employees in the firm was selected as explained in Section 2.4 of the Volume 1 report.

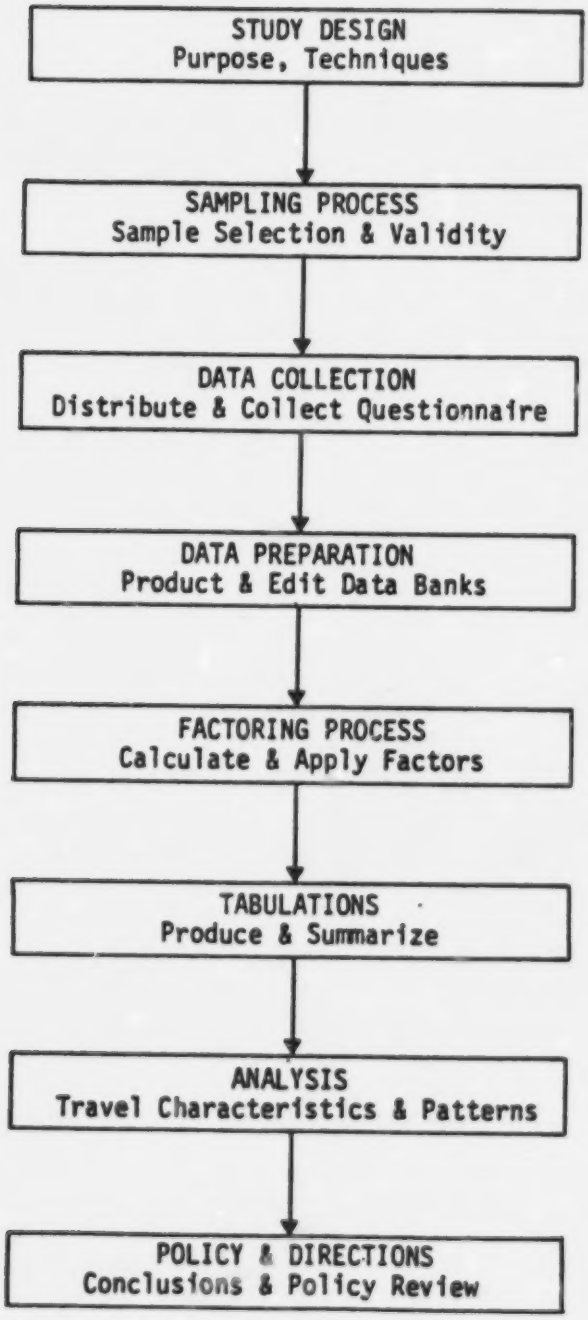
2.2 CONDUCTING THE SURVEY

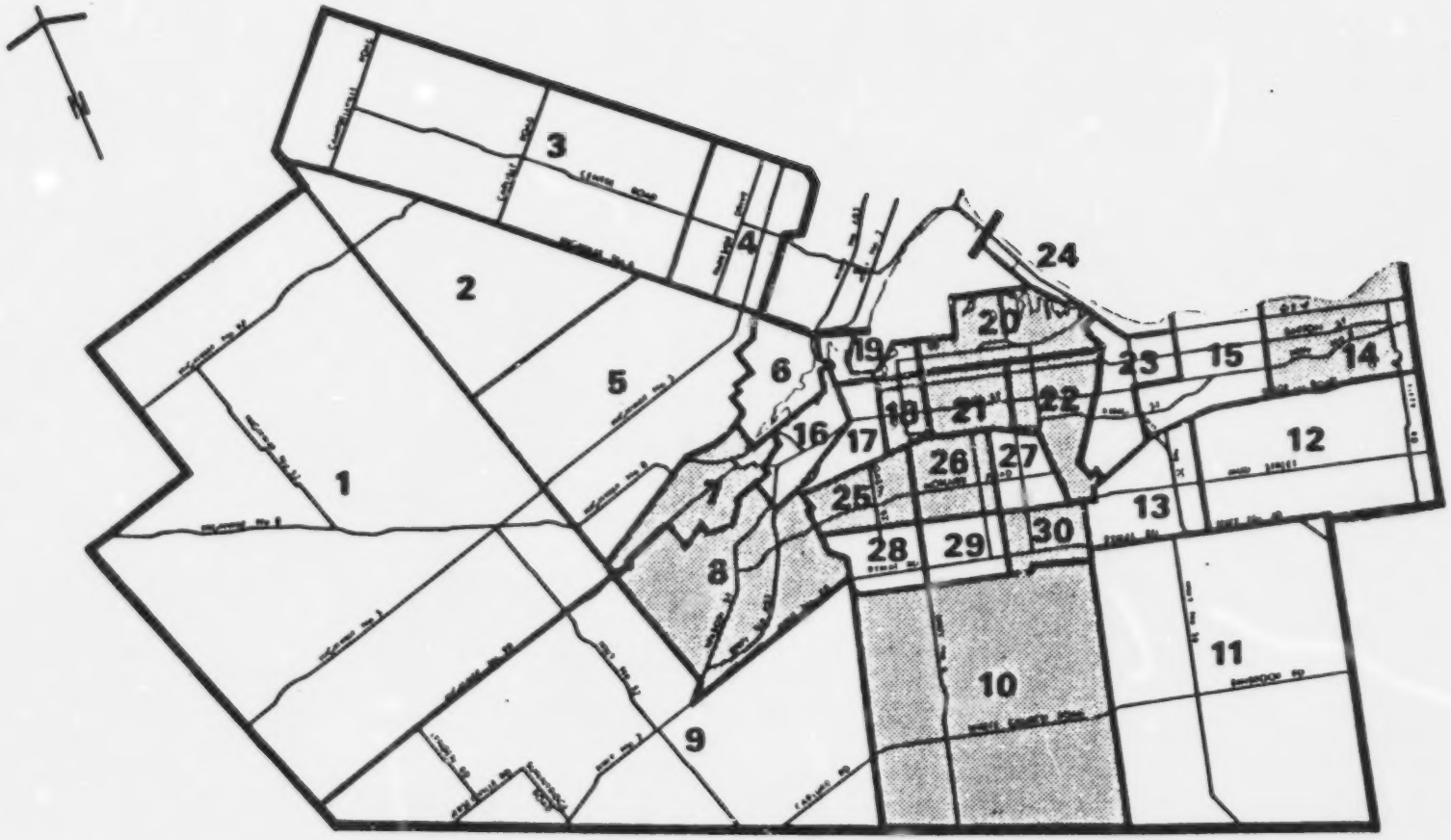
The survey was conducted between September 1980 and January 1981. Information on personal travel behaviour was collected by means of a questionnaire, distributed to the selected employees at their place of work. A copy of this questionnaire is included as Appendix B.

Considerable preliminary publicity was carried out to ensure a good response to the survey. The purpose of the survey was explained to both employers and union officials. Employers were interviewed to obtain information on the nature of their operations and the numbers of people employed, and were asked to assist in the distribution and collection of questionnaires.

EXHIBIT 2.1

SURVEY PROCESS





LEGEND

19 MACRO ZONE NUMBER

ZONES SURVEYED (For Large Firms)

Exhibit 2.2

HAMILTON - WENTWORTH
SURVEY ZONES

Planning and Development Department
Hamilton-Wentworth Region

A total of 31,476 questionnaires were distributed to employees in 332 firms (263 large firms and 69 small firms). There were 14,137 questionnaires completed and returned which represents approximately 7% of the number of employees* estimated to work in Hamilton-Wentworth.

Survey staff coded the responses, and completed preliminary editing. The responses were then keypunched to enable computer analysis. Statistical checks were conducted, as described in Volume 1 to ensure that the survey response was a statistically reliable sample of all employees.

* 1982 Employment Survey, Planning and Development Department, Regional Municipality of Hamilton-Wentworth, June, 1983.

3.0 DATA PREPARATION

The steps involved in the data preparation process are shown in Exhibit 3.1. The Ministry of Transportation and Communications computer facilities and programs were used in this process and in subsequent data analysis.

3.1 CREATION OF DATA BANKS

The survey data was used to build two data banks. Exhibit 3.2 illustrates the format and contents of the Employee Data Bank, based primarily on information from the employee questionnaire. Exhibit 3.3 illustrates the Employer Data Bank, created using information from the employer interview. These two data banks were edited and if key data on a record was invalid or missing and could not be corrected, that record was dropped from the sample.

Analyses focused on the Employee Data Bank. To facilitate this, certain key information such as employer size, type and geographic zones was transferred to the Employee Data Bank from the Employer Data Bank. The details on the contents of the Employee Data Bank, including definitions of each field and the numerical codes used to represent various responses, are found in Appendix C.

3.2 FACTORING METHODOLOGY

Since the survey did not sample all employees, all firms or all geographic areas, it was necessary to use various factors to expand the sample to represent the universe of all employees in the Region.

The large and small employer responses were factored separately, due to the different sampling techniques used for these two types of data. A number of separate factors were developed, as defined in the following sections, to address different aspects of the factoring process. The steps in the factoring process are summarized in Exhibit 3.4.

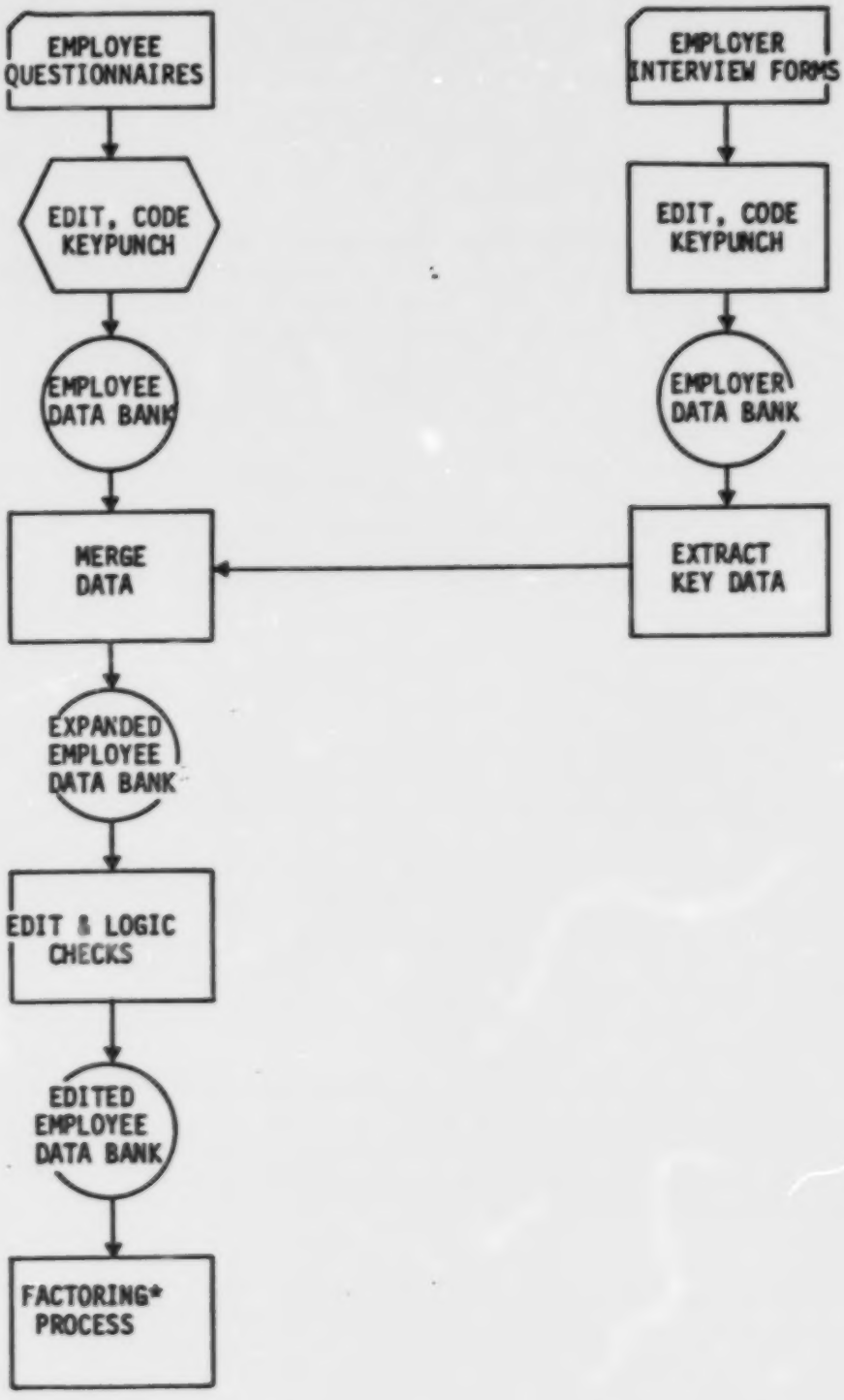
1. Firm Factor

This factor was used to expand the survey data to represent the total employees in each of the sampled firms. This was necessary both for those large firms where a partial sample of employees were requested to complete questionnaires, and in other firms, where the response rate was not one hundred percent.

$$\text{Firm Factor} = \frac{\text{Total employees in firm}}{\text{Employees in firm responding to survey}}$$

EXHIBIT 3.1

PRELIMINARY DATA PREPARATION PROCESS



* See Exhibit 3.4 - Factoring Process

Exhibit 3.2

DATA BANK FORMAT - EMPLOYEE QUESTIONNAIRE

FIELD	CONTENTS	COL.
1	EMPLOYER NUMBER	1 - 4
2	EMPLOYEE / HOME HOUSE ZONE	5 - 8
3	WORK ARRIVAL TIME (24 HR CLOCK)	9 - 12
4	A.M OR P.M FOR WORK ARRIVAL TIME	13
5	DAY OF WEEK FOR WORK ARRIVAL TIME	14
6	WORK DEPARTURE TIME (24 HR CLOCK)	15 - 18
7	A.M OR P.M FOR WORK DEPARTURE TIME	19
8	TRIP TIME TO WORK (MINUTES)	20 - 22
9	TRIP TIME FROM WORK (MINUTES)	23 - 25
10	TRAVEL MODE TO WORK - 1ST FIELD	26
11	" " " " - 2ND FIELD	27
12	" " " " - 3RD FIELD	28
13	TRAVEL MODE FROM WORK - 1ST FIELD	29
14	" " " " - 2ND FIELD	30
15	" " " " - 3RD FIELD	31
16	REASON FOR DRIVER MODE - 1ST FIELD	32
17	" " " " - 2ND FIELD	33
18	" " " " - 3RD FIELD	34
19	NUMBER OF OWNED VEHICLES	35
20	NUMBER OF LEASED VEHICLES	36
21	TYPE OF PARKING	37
22	REASON FOR NON-DRIVER MODE - 1ST FIELD	38
23	" " " " - 2ND FIELD	39
24	" " " " - 3RD FIELD	40
25	WALK TIME TO TRANSIT SERVICE	41 - 44
26	EMPLOYEE SEX	45
27	OCCUPATION	46
28	EMPLOYER SIZE CODE	47
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31	EMPLOYER / WORK HOUSE ZONE	53 - 56
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35	CELL NUMBER - ZONE / SIZE / TYPE	68 - 71
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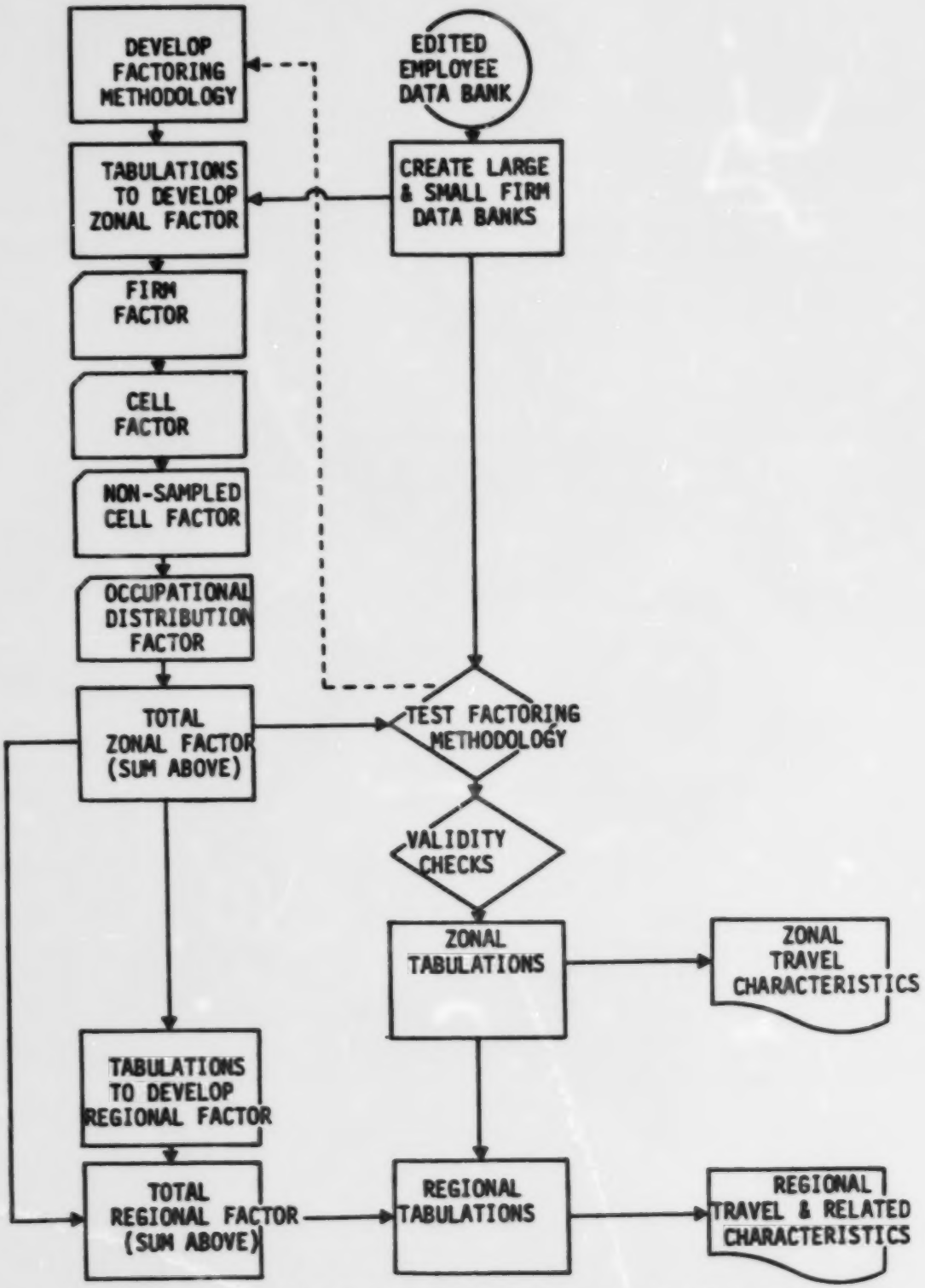
Exhibit 3.3

DATA BANK FORMAT - EMPLOYER INTERVIEW

FIELD	CONTENTS	COL.
1	EMPLOYER NUMBER	1 - 4
2	EMPLOYER TAZ#/ ZONE	5 - 8
3	EMPLOYER TYPE CODE	9
4	NUMBER OF EMPL LOCATIONS	10
5	EMPLOYER SIZE CODE	11
6	% SAMPLE - PRELIMINARY ESTIMATE	12 - 13
7	TOTAL NUMBER OF EMPLOYEES	14 - 17
8	NUMBER OF CLERICAL EMPLOYEES	18 - 21
9	" " SALES "	22 - 24
10	" " SERVICE "	25 - 27
11	" " CONSTRUCTION EMPLOYEES	28 - 30
12	" " PRODUCTION "	31 - 33
13	" " TRANSPORTATION "	34 - 36
14	" " PROFESSIONAL "	37 - 40
15	" " EXECUTIVE "	41 - 44
16	" " OTHER "	45 - 48
17	NUMBER OF MALE EMPLOYEES	49 - 53
18	" " FEMALE "	54 - 57
19	NUMBER OF FULL TIME EMPLOYEES	58 - 61
20	" " PART TIME "	62 - 66
21	FLEXIBLE WORK HOURS AVAILABLE	67
22	START TIME - PRODUCTION STAFF (Day Shift)	68 - 71
23	FINISH TIME " "	72 - 75
24	START TIME - OFFICE STAFF	76 - 79
25	FINISH TIME " "	80 - 83
26	START TIME - PRODUCTION (Afternoon)	84 - 87
27	FINISH TIME " "	88 - 91
28	START TIME - PRODUCTION (Evening)	92 - 95
29	FINISH TIME " "	96 - 99
30	START TIME - OTHER / SPECIAL	100 - 103
31	FINISH TIME " "	104 - 107
32	LANGUAGE OTHER THAN ENGLISH SPOKEN	108
33	NUMBER OF PERSONS DRIVEN	109 - 112
34	WALK TIME FROM PARKING TO WORK	113 - 116
35	% ABSENTEEISM RATE	117 - 120
36	KNOWN OR NOT KNOWN	121
37		122

EXHIBIT 3.4

FACTORING METHODOLOGY PROCESS



Note: Factoring and tabulations completed separately for large and small firm data banks and results summed

2. Cell Factor

The survey data in each cell was next factored up to represent the total employees in that cell. It was assumed that within each cell, firms not sampled had similar characteristics to sampled firms, since a representative sample was obtained in each cell.

$$\text{Cell Factor} = \frac{\text{Total employers in cell}}{\text{Employers in cell participating in survey}}$$

3. Non-Sampled Cell Factor

Several cells were not sampled at all, since they contained very few or no firms. Since these unsampled cells could not be factored up using the cell factor described above, a non-sampled cell factor was calculated, based on average firm characteristics in sampled cells within the same geographic zone. This factor was then applied to the non-sampled cells which contained a small number of firms.

4. Occupational Distribution Factors

For several large firms there was concern that the physical method of distribution of the survey questionnaire had resulted in an over representation of certain occupational categories. To check this, the occupational distribution (percentage of employees in each occupational category) was calculated for each major firm. This was done using both the employee survey responses, and the information obtained from the employer interview. Where these two distributions were significantly different, factors were calculated to bring the employee survey response rates more into line with the employer data.

$$\text{Occupational Distribution Factor} = \frac{\text{\% Employees in occupation by firm (from employer data)}}{\text{\% Employees in occupation by firm (from employee data)}}$$

5. Zonal Factors

The above four factors were combined for each survey record to produce total zonal factors. Up to and including this point, factors were developed separately for large and small firm data. Therefore, factors were produced for each of the 11 zones for which large firms were sampled and for all zones within which small firms were sampled.

Test tabulations were run on the computer to check the accuracy of the overall zonal factors. The results were compared with firm and cell universe distributions contained in the Volume 1 report. The factored data was within one percent of the perceived universe in terms of total employees in each cell.

6. Regional Factors

The regional factor enables the translation of data on the 11 surveyed zones into a form representative of all zones in the Region. This is done on the basis of land use categories of zones as outlined in the sampling techniques.

Each of the factors were calculated separately and stored in separate fields of the Employee Data Bank, along with fields representing total factors. Therefore, further analysis could be carried out at any level of the factoring process, that is:

- for completely unfactored responses
- for responses factored up to represent each of the 11 surveyed zones
- for responses factored up to represent the entire Region, including all 30 zones

The total regional factors were applied for analysis of overall travel characteristics. The zonal factors were used for analyzing zonal travel characteristics or origin-destination patterns. Unfactored data was used only as a means of checking survey techniques.

3.3 PRODUCTION OF TABULATIONS

In order to analyze the results of the survey, computer tabulations were produced to summarize the data. Prior to survey analysis, a number of basic tabulations were run to ensure that the survey sample was comparable to other data sources, particularly the most recent Census data. The results of these census validity checks are contained in Section 3.4.

Tabulations were run to provide information on basic travel characteristics, such as travel mode, trip time and trip length, on a regional basis for both 24-hour and p.m. peak hour time periods. The results are outlined in Section 4.1 of this report.

Further tabulations were produced to determine how the basic travel characteristics were related to other factors, such as reasons for mode choice, parking type, auto availability, etc. These results are outlined in Section 4.2. Tabulations were also prepared to determine origin-destination patterns, as described in Section 4.3.

3.4 CENSUS VALIDITY CHECKS

The survey results were compared with the 1971 Census in terms of the distribution of demographic characteristics. These characteristics include the distribution of employees by firm type and by occupation as well as household auto ownership. Data from the 1976 Census was available for comparing the rate of response by sex. The results of the 1981 Census were not available for comparision.

Exact matching of the two data sources is not expected. The 1971 Census data was based on information collected at the place of residence, while the Employee Travel Survey data relates to the place of work. The survey data thus includes responses from people working inside the Region of Hamilton-Wentworth who live elsewhere, while the Census data includes only those who live in the Region, some of whom work outside the Region. There is also a difference of approximately ten years between the two data sources and thus, some changes can be expected. Therefore, the data from the two sources is checked for general compatibility rather than for exactness of fit.

The percentages of employees within four major categories of firm activity type were compared for the 1971 Census and the Employee Travel Survey. The firm type distributions are very similar. Employees in manufacturing, construction and wholesale firms represent the highest proportion in both cases, at approximately 43 - 44% of the total. Employees in service firms represent another major segment, at 38 - 41% of the total. The observed difference in the proportion of service employees between the two sources could be due to a combination of factors such as changes over time, and differences in the scope of data collection. Employees in retail firms represent approximately 16% of total employees in both cases. Primary activity employees, such as those involved in agricultural and extractive firms, represented 1.8% in the 1971 Census, but were not surveyed in the Employee Travel Survey.

The percentage distribution of employees by occupation was compared for the 1971 Census and the Employee Travel Survey. The two sources exhibit fairly similar distributions among occupational categories although there are some differences. Employees in production, professional, clerical and office, and service occupations, represent the highest proportions of employees in the Employee Survey, with over 15% in each category. These occupational categories are also of greatest importance within the 1971 Census, although the service and professional occupations are somewhat lower in relative importance.

Information on the male/female ratio of employees working in Hamilton-Wentworth from the 1976 Census was compared with the distribution for the Employee Travel Survey. The percentages of male and female employees are almost identical for the two sources, with approximately 62% male and 38% female employees.

The distribution of vehicles owned on a household basis was compared for both the 1971 Census and the Employee Travel Survey. There is a significant difference between the data from the two sources, with the more recent survey showing a significantly higher average vehicle ownership. In the 1971 Census, 77% of households owned one or more vehicles as compared with 92% for the Employee Travel Survey.

The differences can be explained by three factors. Firstly, the ten years between the two surveys involved advances in prosperity and vehicle ownership. Secondly, the Census figures included the entire population, whereas the more recent survey includes only the employed labour force which would tend to have a higher vehicle ownership. Thirdly, the Employee Survey question on vehicle ownership included all vehicles (cars, trucks and vans) owned or leased by the respondent's family, whereas the Census data includes only automobiles.

4.0 SURVEY RESULTS

Following the data preparation steps described in Chapter 3.0, the survey data was analyzed to develop an understanding of the travel characteristics of employees, the factors that influence travel characteristics, and the travel patterns that result in Hamilton-Wentworth.

Summaries for all travel characteristics and related factors were produced at the Regional level. Key characteristics and travel pattern information were summarized at the Zonal level. Most of the information presented in this report is representative of total daily work trips, occurring over a 24 hour period. Some additional summaries were produced for those work trips occuring during the p.m. peak hour period.

The results of the analysis are presented in this chapter under the following headings:

- Travel Characteristics,
- Factors Related to Mode of Travel,
- Travel Patterns, and
- Comments and Suggestions

Policy directions which are indicated by the analysis are provided in Chapter 5.0. Their purpose is to assist in improving the effectiveness of the transportation system for work-related travel.

4.1 TRAVEL CHARACTERISTICS

There are three important characteristics associated with each work trip which define the nature of travel. These are the time of day at which the trip was made, the length of the trip, and the travel mode used to make the trip (i.e. auto, transit, etc). The survey results for these three characteristics are outlined here in terms of the percentage of employees that travel at certain times, have certain trip lengths, and use certain modes.

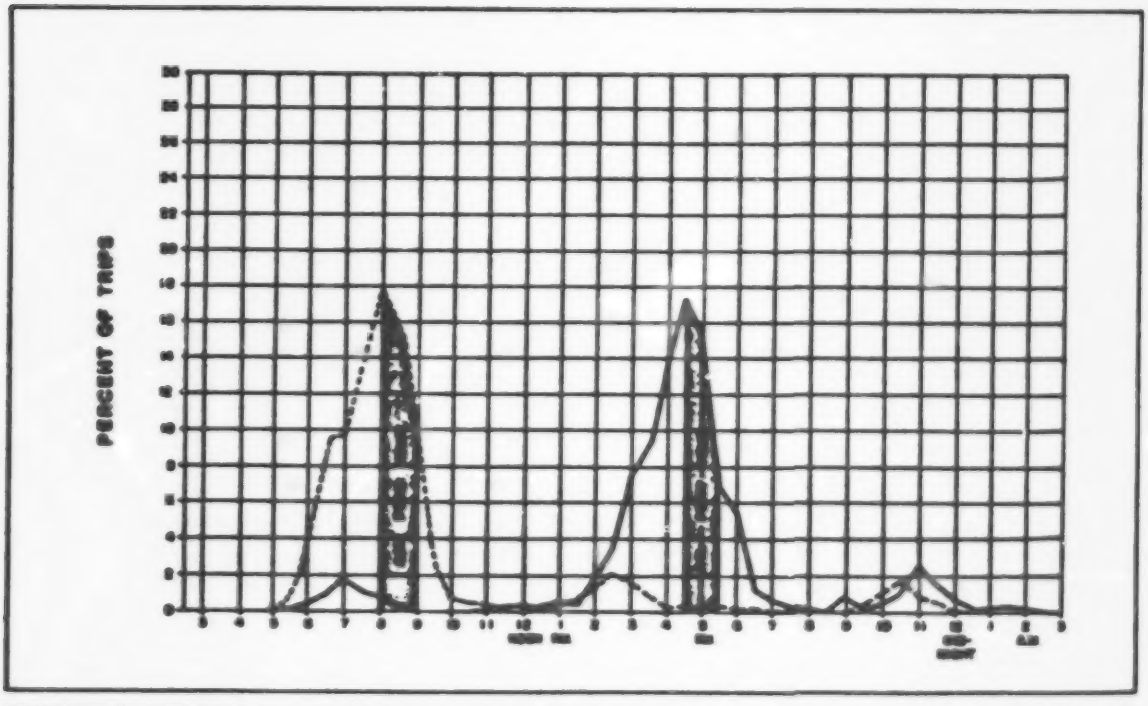
Information on the three major travel characteristics is presented for total employees in the Region. Information is also presented on variations within the Regional distribution, such as variations between geographic areas and occupational groups, and between firms of different types and sizes.

4.1.1 Time of Travel

Road and transit facilities must be designed to accommodate the peak loadings of trips which may be determined from the travel time distribution.

For the purpose of this analysis, the time of travel is defined as the time at which employees arrive at work, and depart from work, as determined from responses provided on the survey questionnaire. Exhibit 4.1 plots the percentage of employees in the Region arriving and departing from their place of employment for each half hour period during the day, starting at the times shown. The major characteristics of this total time distribution are summarized as follows:

- The morning peak hour of travel occurs between 8:00 a.m. and 9:00 a.m., when over 30% of trips to work are made.
- The evening peak hour occurs between 4:30 and 5.30 p.m., when over 30% of trips from work are made.
- Broad shoulder areas occur around these peak hours within which most of the remaining trips occur. Over 50% of trips to work and from work occur in the 2 hour period surrounding and including each peak hour. Over 70% of trips occur in the 3 hour period around the peak hours.
- Within these shoulder areas a higher percentage of trips are made before the actual peak hour than after it.
- Several smaller peaks occur throughout the day, at 7:00 a.m., 3:00 p.m. and 11:00 p.m. Up to 2% of total trips occur in the half hour periods starting at these times.



LEGEND

----- WORK ARRIVE TIME

—— WORK DEPART TIME

Exhibit 4.1

TRIP TIME DISTRIBUTION
TOTAL REGION

These characteristics of time distribution have been compared with those noted in past studies in Hamilton-Wentworth. The 1974 Home Interview Survey* indicated peak hours of 8:00 - 9:00 a.m. and 5:00 - 6:00 p.m. for work trips.

The overall time distribution is very similar for the results of the 1974 Home Interview Survey and the 1981 Employee Travel Survey in terms of the percentage of trips occuring in the peak hours, the broad shoulder areas and the small secondary peaks.

The Survey results were also compared with information on work trip starting and departure times for other southern Ontario municipalities such as Metropolitan Toronto, York and Durham. While the peak hours of travel are 8:00 - 9:00 a.m. and 4:30 - 5:30 p.m. in Hamilton-Wentworth, the peak hours occur slightly earlier in these other areas, at 7:00 - 8:00 a.m. and 4:00 - 5:00 p.m.** (based on data summarized by one hour periods). The magnitude of peaking in these municipalities was similar to that noted in Hamilton-Wentworth.

Table 4.1 indicates the average p.m. peak hour for trips from work, for employees in each occupation category, firm type category, firm size category and work zone. For each category, the percentage of total daily employees who depart from work during the p.m. peak hour is also included. The following major characteristics and variations are noted:

- Employees in clerical and office, service and construction occupations; service type firms; small to medium size firms (under 300 employees) and employees working in most geographic areas have a p.m. peak hour between 4:30 and 5:30, the same as for the total of all employees in the Region.

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* It should be noted, for the purposes of this and later analyses, that the results of the Employee Travel Survey and the 1974 Home Interview Survey are not directly comparable, due to differences in methodology. The 1974 Home Interview Survey deals with all trips made by people living Hamilton-Wentworth (regardless of whether they work here or elsewhere, or at all). By contrast, the Employee Travel Survey deals with the work trips of all employees working in Hamilton-Wentworth (regardless of whether they live here or elsewhere). The previous survey was designed to collect information on total personal travel (related to work, shopping, school, etc.). The more recent survey was designed to collect information on work-related travel only. Overall travel characeristics may be relatively similar for the two surveys, although the extent of incommuting to and outcommuting from Hamilton-Wentworth may be expected to cause some differences. Differences can also be expected because of the time lapse between the surveys. Comparisons are made to obtain a general idea of changes over time, but conclusions drawn from the comparison must take into consideration the differences in the data bases.

** Greater Toronto Area Inter-Regional Travel Characteristics, MTC Toronto Area Transportation Planning Data Collection Committee, September 1982, Figures 19 & 20.

TABLE 4.1

WORK DEPART TIME - P.M. PEAK HOUR

	P.M. PEAK HOUR	% OF DAILY TRIPS
REGIONAL AVERAGE	4:30 - 5:30 P.M.	33
OCCUPATION		
1. Clerical & Office	4:30 - 5:30	58
2. Sales	5:30 - 6:30	46
3. Service	4:30 - 5:30	25
4. Construction	4:30 - 5:30	32
5. Production	3:00 - 4:30	29
6. Transportation	3:30 - 4:30	31
7. Professional	4:00 - 5:00	42
8. Executive & Management	5:00 - 6:00	44
FIRM TYPE		
1. Manufacturing, Construction & Wholesale	4:00 - 5:00	34
2. Retail	5:00 - 6:00	47
3. Service	4:30 - 5:30	38
FIRM SIZE		
1. 1 - 19 employees	4:30 - 5:30	45
2. 20 - 99	4:00 - 5:00	37
3. 100 - 299	4:30 - 5:30	40
4. 300 - 499	4:00 - 5:00	29
5. 500+	4:00 - 5:00	32
WORK ZONE*		
Zone 7 Urban Dundas	4:30 - 5:30	49
Zone 8 Urban Ancaster	4:00 - 5:00	72
Zone 10 West Glanbrook	4:30 - 5:30	44
Zone 14 S.E. Stoney Creek	4:30 - 5:30	44
Zone 18 Downtown Hamilton	4:30 - 5:30	45
Zone 20 Hamilton Bayfront	3:30 - 4:30	32
Zone 21 Central Hamilton	4:30 - 5:30	40
Zone 22 East-Central Hamilton	4:30 - 5:30	25
Zone 25 N.W. Hamilton Mtn.	4:00 - 5:00	38
Zone 26 North Hamilton Mtn.	5:00 - 6:00	37
Zone 30 S.E. Hamilton Mtn.	5:00 - 6:00	56

* See Exhibit 2.1, Hamilton-Wentworth Survey Zones Map

- Employees in production occupations, manufacturing type firms, large firms, and the Bayfront Industrial Area have an earlier peak hour, occurring between 3:00 and 4:00.

- Employees in sales and executive occupations, retail type firms, and suburban zones have a later peak hour, occurring between 5:00 and 6:00 p.m.

The travel time distributions for Downtown Hamilton and the Bayfront Industrial Area are shown separately, in Exhibits 4.2 and 4.3 respectively.

For Downtown Hamilton, the travel time pattern illustrated in Exhibit 4.2 may be described, and compared with that for the overall Region, as follows:

- The peak hours occur at 8:00 - 9:00 a.m. and 4:30 - 5:30 p.m., the same as for the overall Region.

- Travel is considerably more peaked, with over 45% of total trips to and from work occuring in the peak hours.

- Almost all trips occur in the vicinity of the peak hours, with approximately 70% of trips to and from work occuring in the 2 hour period surrounding the peak hours, and 80% of trips occuring in the related 3 hour period.

- Of these trips in the vicinity of the peak hours, a slightly higher proportion occur before the peak hours than after them.

- No secondary peaks are evident, although there are small numbers of employees arriving and leaving work throughout the day.

For the Bayfront Industrial Area, the trip time distribution illustrated in Exhibit 4.3, shows the following characteristics:

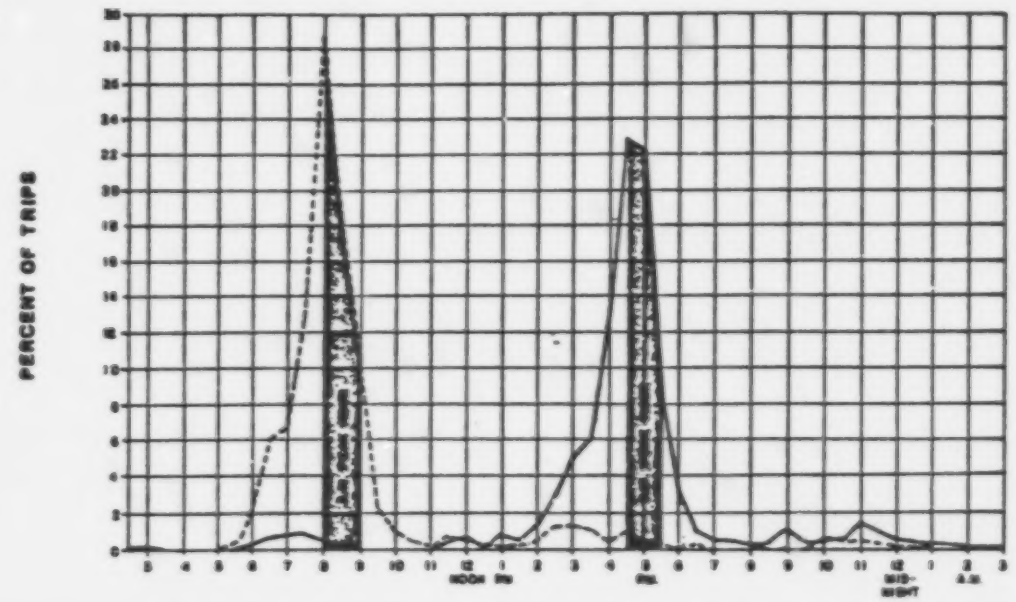
- The peak hours occur at 6:30 - 7:30 a.m. and 3:30 - 4:30 p.m.

- Over 30% of total trips to and from work occur in the peak hours, which is similar to the Regional average.

- Approximately 60% of trips occur in the 2 hour periods surrounding the peak hours, and 70% occur in the related 3 hour periods.

- Relatively equal proportions of trips occur just prior to and just following the peak hours.

- Major secondary peaks for trips to work occur during the half hour periods starting at 2:30 p.m. and 10:30 p.m., each representing up to 4% of total daily work trips. Secondary peaks of similar magnitude occur for employees leaving work during the half hour periods starting at 7:00 a.m. and 11:30 p.m.

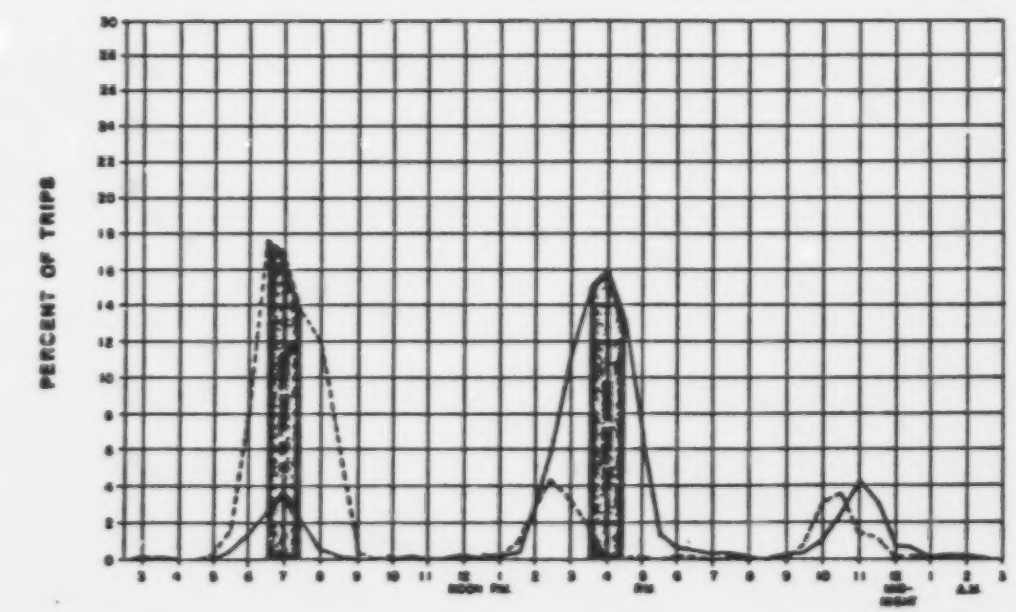


LEGEND

- ---- WORK ARRIVE TIME
- —— WORK DEPART TIME

Exhibit 4.2

TRIP TIME DISTRIBUTION
DOWNTOWN (ZONE 18)



LEGEND

- ---- WORK ARRIVE TIME
- —— WORK DEPART TIME

Exhibit 4.3

TRIP TIME DISTRIBUTION
BAYFRONT (ZONE 30)

Conclusions - Time of Travel

The following general conclusions can be drawn from the observations on the time of travel for work trips:

- The a.m. peak hour occurs at 8:00 - 9:00 a.m. and the p.m. peak hour at 4:30 - 5:30 p.m., reflecting the importance of the 9:00 a.m. to 5:00 p.m. working day associated with most employees in the Region.

- Shift workers, such as production employees in manufacturing plants, who work from approximately 7:00 a.m. to 3:00 p.m., have major impacts on travel time distribution. They account for the high proportion of trips preceeding the actual peak hours within the overall Regional distribution and also account for the earlier peak hours associated with the Bayfront Area.

- Variations by geographic area, firm type and firm size are related primarily to employee occupation. Earlier than average time of travel is associated with production, construction and transportation employees. Later than average time of travel is associated with sales and executive employees.

- Work areas with a high proportion of employees in educational institutions also have earlier than average p.m. peak hours.

4.1.2 Length of Trip

For the purposes of this survey, trip length is measured as the length of time that people spend travelling to and from work. This information is derived from questionnaire responses concerning travel time. Therefore, it is a subjective estimate of travel time, as perceived by employees, rather than an actual measure.

Exhibit 4.4 plots the percentage of employees with trip lengths from work in each 5 minute interval between 5 and 100 minutes. The trip length distributions are plotted separately for all trips made over the 24 hour period (total daily) and for trips made in the p.m. peak hour. It may be noted that:

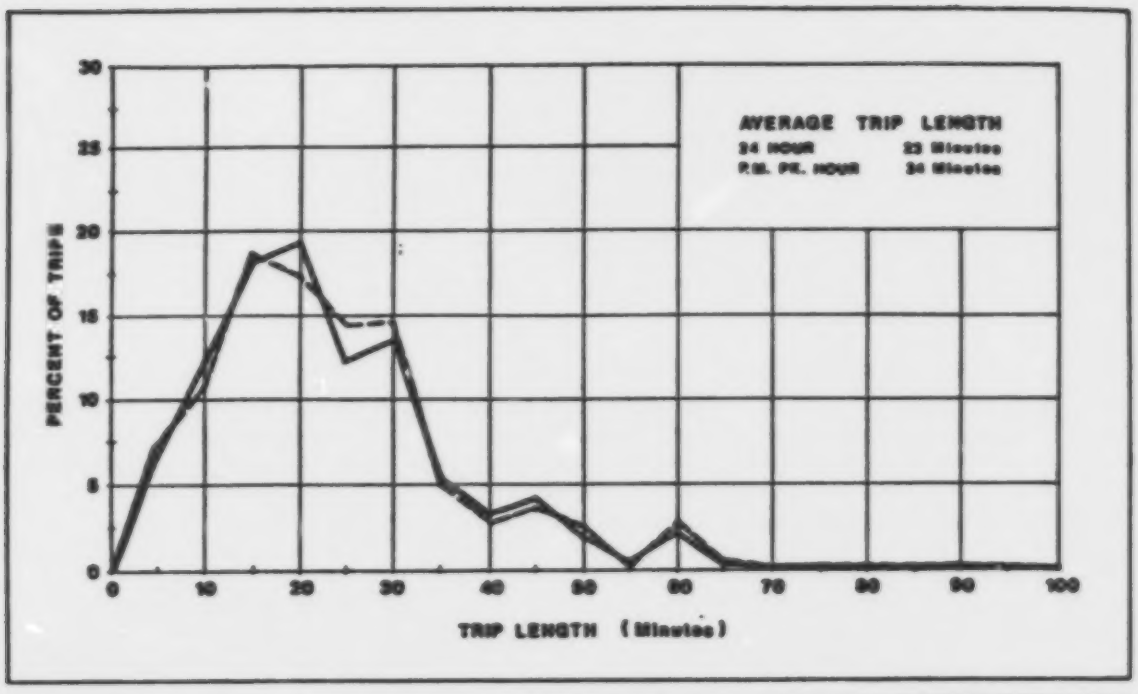
- The daily average work trip length is 23 minutes.

- The p.m. peak hour average trip length is 24 minutes.

- Over 70% of daily trips are between 10 and 30 minutes in length.

- Approximately 90% of daily trips are less than 40 minutes in length.

This current trip length data has been compared with data from past studies, and with surrounding urban areas. Exhibit 4.5 compares the cumulative work trip length frequency for the Employee Travel Survey, and the 1974 Home Interview Survey. This illustrates that trip length has increased since the 1974 survey, with a higher percentage of longer trips occurring in the 1980 survey.



LEGEND

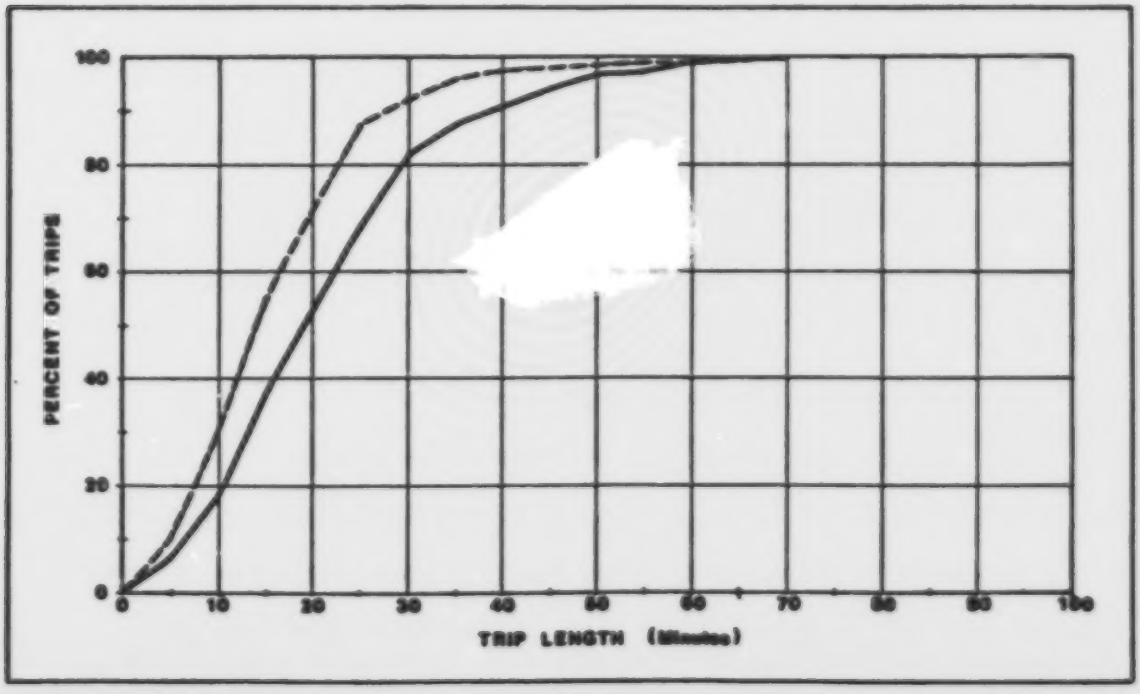
24 HOUR

P.M. PK. HOUR

NOTE : DISTRIBUTION BY 5 MINUTE INTERVALS

Exhibit 4.4

TRIP LENGTH FREQUENCY DISTRIBUTION
TRIP TIME FROM WORK (24 HOUR & P.M. PK. HOUR)



LEGEND

1960 EMPLOYEE SURVEY

1974 HOME INTERVIEW SURVEY

NOTE : DISTRIBUTION FOR 5 MINUTE INTERVALS. FOR 24 HOUR PERIOD.

Exhibit 4.5

CUMULATIVE TRIP LENGTH FREQUENCY
WORK TRIPS - 1960 AND 1974

The daily average trip length has increased from 15.5 minutes to 23 minutes. This increase may also be partly due to the fact that the 1974 survey included total persons living in Hamilton-Wentworth, while the 1980 survey also includes employees living outside of Hamilton-Wentworth who work here (as explained on Page 16).

Information related to other municipalities in the area indicates that work trip lengths are increasing in Metropolitan Toronto.* This increase may be attributed to the growth of suburban areas.

Table 4.2 illustrates the variations in average trip length by categories of occupation, firm type, firm size and geographic area. The following characteristics are noted:

- Longer than average trip lengths are associated with construction and production occupations; manufacturing, construction and wholesale firms; firms with 500 or more employees; and the Bayfront Industrial Area.

- Shorter than average trip lengths are associated with sales and executive occupations; service and retail firms; relatively small firms; and work locations in suburban areas.

Conclusions - Trip Length

The following concluding remarks may be made concerning trip length characteristics:

- Average daily (24 hour) trip length is 23 minutes.

- Average p.m. peak hour trip length is almost identical to the daily average.

- Trip length has been increasing since 1974, in both Hamilton-Wentworth and adjacent urban areas.

- Trips to major industrial work areas are longer than average.

- Trips to suburban work areas are shorter than average.

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*Greater Toronto Area Inter-Regional Travel Characteristics, MTC, September 1982, Page 31

TABLE 4.2

AVERAGE TRIP LENGTH - 24 HOUR PERIOD

REGIONAL AVERAGE		23 Minutes
OCCUPATION		
1.	Clerical & Office	23
2.	Sales	20
3.	Service	23
4.	Construction	28
5.	Production	26
6.	Transportation	23
7.	Professional	22
8.	Executive & Management	21
FIRM TYPE		
1.	Manufacturing, Construction & Wholesale	26
2.	Retail	22
3.	Service	20
FIRM SIZE		
1.	1 - 19 employees	21
2.	20 - 99	21
3.	100 - 299	23
4.	300 - 499	23
5.	500+	25
WORK ZONE*		
Zone 7	Urban Dundas	15
Zone 8	Urban Ancaster	19
Zone 10	West Glanbrook	23
Zone 14	South-east Stoney Creek	20
Zone 18	Downtown Hamilton	23
Zone 20	Hamilton Bayfront	26
Zone 21	Central Hamilton	25
Zone 22	East-central Hamilton	20
Zone 25	North-west Hamilton Mountain	19
Zone 26	North-central Hamilton Mountain	17
Zone 30	South-east Hamilton Mountain	23

*See Exhibit 2.1, Hamilton-Wentworth Survey Zones Map

4.1.3 Mode of Travel

Travel mode refers to the means of transport by which trips are made. For the summaries provided in this report, modes were grouped into four major categories: auto driver, auto passenger, transit user and other. The mode information was collected by means of the survey questionnaire, for trips to work and from work, separately.

Exhibit 4.6 illustrates the percentage of employees who use each of the four major mode categories for their trips from work. Two distributions are provided, one for total daily trips (24 hour) and one for p.m. peak hour trips.

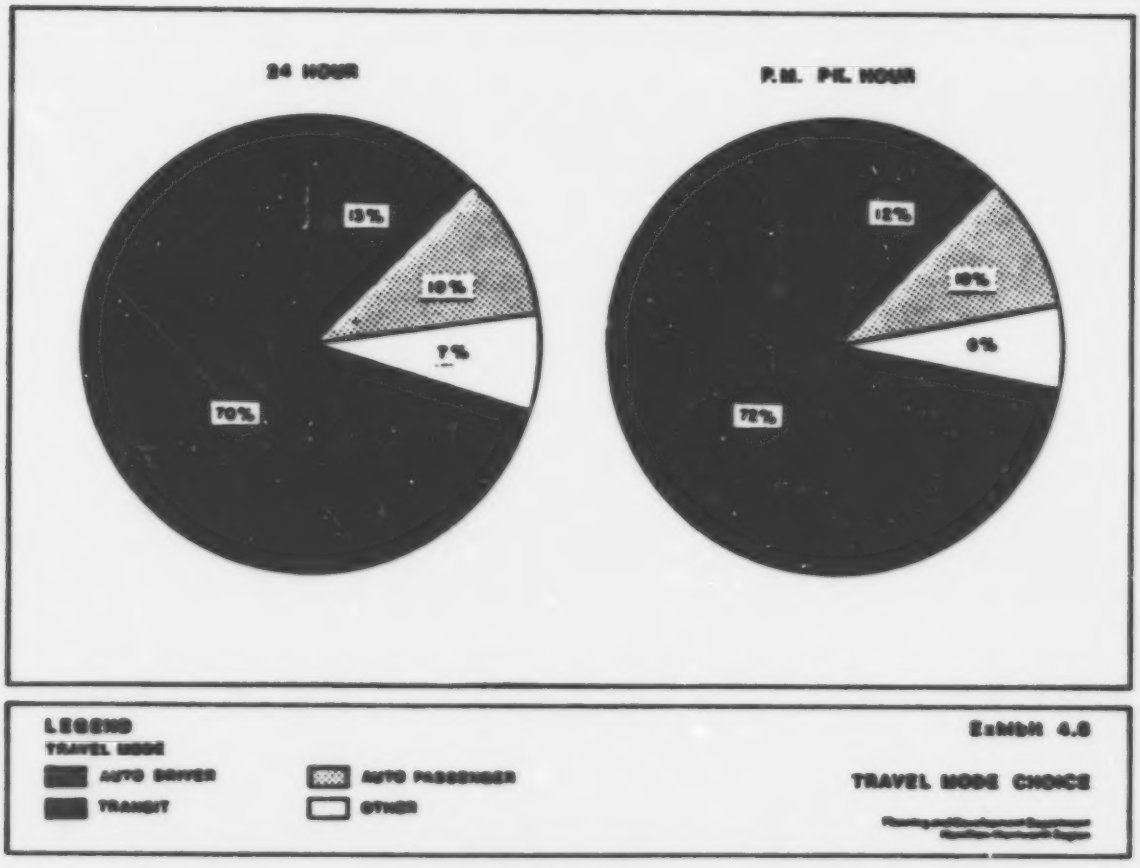


Exhibit 4.6

The major characteristics of the travel mode distribution are as follows:

- The vast majority of daily work trips are made by auto drivers.(70%)
- Transit users represent 13%, auto passengers 10%, and other mode users 7% of daily work trips.

- The transit passenger category includes users of the Hamilton Street Railway, Canada Coach Lines and GO Transit, which are the three major local/regional carriers. HSR users represent 90 of all transit users (or 12% of total employees). The remaining transit users are split fairly evenly between Canada Coach Lines and GO Transit. Further information on travel characteristics by individual transit carrier is included in later sections.

- Users of other modes include two types: employees who walk to work, and employees who use a variety of miscellaneous modes including mainly taxi and bicycle, as well as motorcycle. Employees who walk represent 94% of these (or 6% of total employees).

- The p.m. peak hour distribution is almost identical to that for the total daily. There are slightly more auto drivers, and slightly fewer transit and other mode users during the p.m. peak.

Mode choice information from this survey has been compared with the results of the 1974 Home Interview Survey. Significant differences were noted, which must be considered in terms of the differences in survey methodology. The mode choice distribution of total daily trips for these two surveys are as follows:

Mode	Home Interview Survey	Employee Travel Survey
Auto Driver	60%	70%
Transit User	12%	13%
Auto Passenger	20%	10%
Other	8%	7%

This comparison indicates that in terms of work trips, the Employee Travel Survey results include more auto drivers and fewer auto passengers. The rate of transit use for work trips is relatively similar.

The variations in mode choice by categories of employee occupation, firm type, firm size and geographic area are indicated in Table 4.3. The distribution of mode choice by employer type is also displayed graphically in Exhibit 4.7, and mode choice by employer size in Exhibit 4.8. The major observations drawn from this analysis are as follows:

- The auto driver mode is most prevalent among employees in executive, management and transportation occupations; manufacturing, construction and wholesale type firms; large firms; the Bayfront Industrial area and outlying geographic areas.

- The auto passenger mode is used most by clerical and office employees.

- Transit use is highest among employees in clerical, office and service occupations; retail and service firms; and medium size firms.

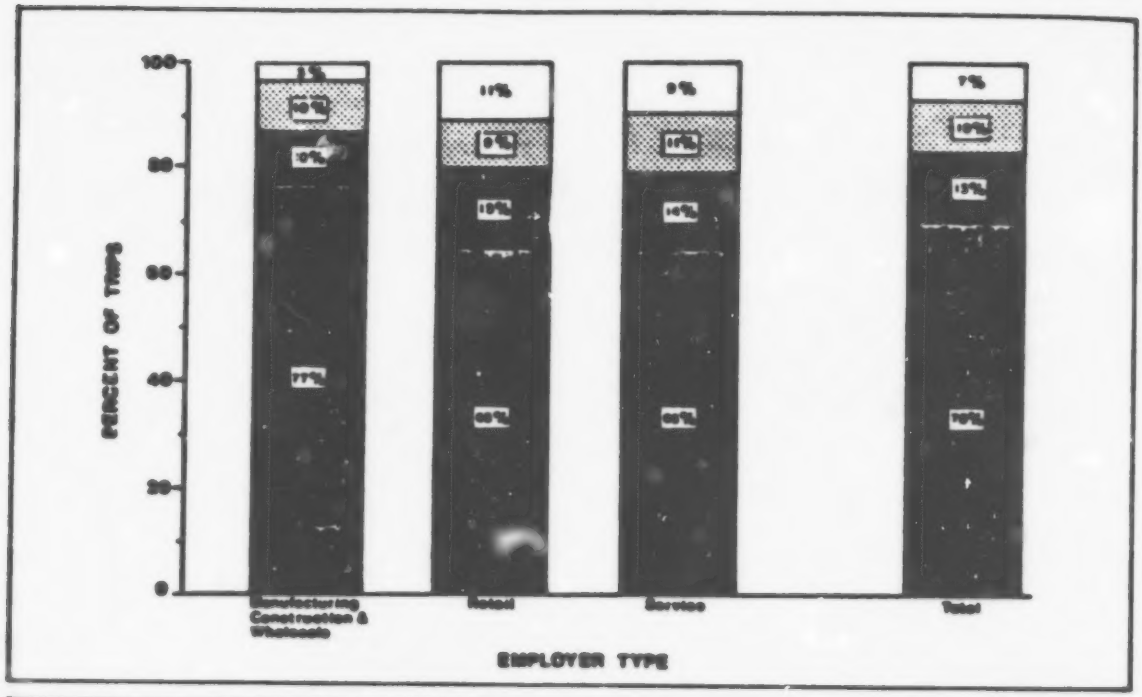
- The rate of transit use to work locations in downtown Hamilton is twice as high as to other work areas.

TABLE 4.3

TRAVEL MODE CHOICE - 24 HOUR

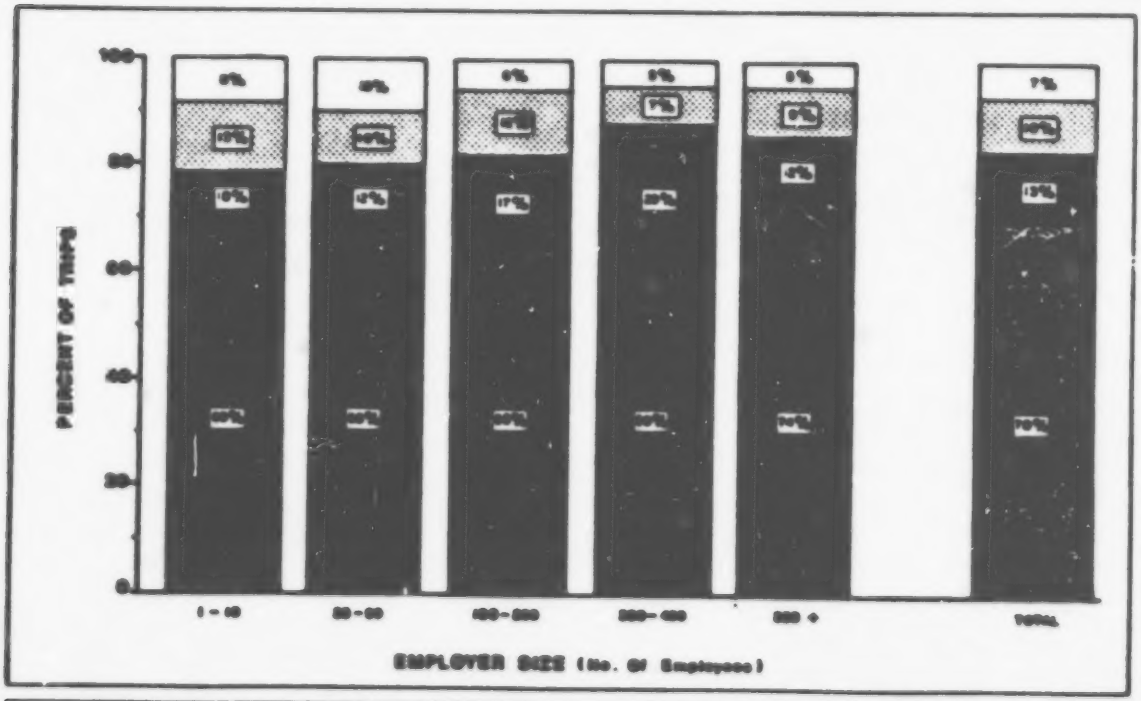
(% OF EMPLOYEES)

	AUTO DRIVER	AUTO PASSENGER	TRANSIT	OTHER	TOTAL
REGIONAL AVERAGE	70%	10%	13%	7%	100%
OCCUPATION					
1. Clerical & Offc.	58	17	8	17	100
2. Sales	71	10	9	10	100
3. Service	64	8	19	9	100
4. Construction	78	12	9	1	100
5. Production	74	10	12	4	100
6. Transportation	80	9	6	5	100
7. Professional	75	8	9	8	100
8. Exec. & Mgmt.	90	3	4	3	100
FIRM TYPE					
1. Manf. Const. & Wholesale	77	10	10	3	100
2. Retail	65	9	15	11	100
3. Service	65	11	14	9	100
FIRM SIZE					
1. 1 - 19 employees	69	13	10	8	100
2. 20 - 100	68	10	12	10	100
3. 100 - 299	65	12	17	6	100
4. 300 - 499	59	7	29	5	100
5. 500+	74	9	12	5	100
WORK ZONE					
Zone 7 Urban Dundas	72	9	3	17	100
Zone 8 Urban Ancaster	95	3	0	2	100
Zone 10 West Glanbrook	88	10	1	2	100
Zone 14 S.W. Stoney Cr.	84	12	1	2	100
Zone 18 Downtown Ham.	56	9	26	9	100
Zone 20 Ham. Bayfront	82	8	8	2	100
Zone 21 Central Ham.	67	14	15	5	100
Zone 22 East-Cent. Ham.	71	9	12	8	100
Zone 25 N.W. Ham. Mtn.	77	11	8	5	100
Zone 26 N.C. Ham. Mtn.	64	8	10	18	100
Zone 30 S.E. Ham. Mtn.	78	11	9	2	100



LEGEND
TRAVEL MODE
AUTO DRIVER
AUTO PASSENGER
TRANSIT
OTHER

Exhibit 4.7
TRAVEL MODE CHOICE
BY EMPLOYER TYPE



LEGEND
TRAVEL MODE
AUTO DRIVER
AUTO PASSENGER
TRANSIT
OTHER

Exhibit 4.8
TRAVEL MODE CHOICE
BY EMPLOYER SIZE

- Transit use is relatively low to suburban areas, and very low to the area municipalities outside of Hamilton.

Conclusions - Mode of Travel

The conclusions concerning mode of travel are summarized as follows:

- The majority of employees drive an automobile to work, and the use of this mode has been increasing in importance over time.
- The percentage of employees who travel as passengers in automobiles has decreased in importance over time.
- The percentage of transit use for work trips has remained fairly constant over time.
- Transit is used most by clerical, office, sales and service employees.

4.2 FACTORS RELATED TO MODE OF TRAVEL

In addition to the information on travel characteristics, information was collected concerning factors which influence travel, particularly those which influence travel mode choice. This information is required to determine why people use certain modes, and to assist in designing appropriate transportation system improvements.

Information on these factors has been collected and analyzed in two ways. Firstly, employees were asked to identify the specific reasons why they select certain modes. Secondly, employees provided information on a number of other characteristics which have been related to mode choice, such as the availability of an automobile, or proximity to transit services.

Both auto drivers and transit users were surveyed to determine the reasons for their choice of mode.

4.2.1 Driver Mode Choice Reasons

Employees who drive to work were asked to identify the reasons why they chose to drive.

Table 4.4 provides the percentage distribution of driver mode choice reasons, for the overall Region, and by categories of occupation, firm type, firm size and key geographic areas. The following general observations may be made concerning this data:

- For the overall Region, the most important reasons for driving are that it is "faster than transit" (cited by 28% of drivers) and "convenient" (26%).

TABLE 4.4

DRIVER MODE CHOICE REASONS

(% OF EMPLOYEES)

	Faster Than Transit	Driving Convenient	Only Means of Transportation	Personal Business	Trips Related to Work	Dropped Off Passenger	Transp. Goods for Work	Car or Van Pool	Physical Disability	Total
REGIONAL AVERAGE	28%	26%	15%	11%	10%	4%	3%	2%	1%	100%
OCCUPATION										
1. Clerical & Office	31	30	10	14	5	5	1	3	1	100
2. Sales	24	21	10	10	19	7	7	1	1	100
3. Service	30	26	19	10	5	2	4	3	1	100
4. Construction	24	22	25	3	10	2	11	2	1	100
5. Production	32	29	19	11	3	2	0	3	1	100
6. Transportation	28	22	22	13	4	3	2	4	0	100
7. Professional	26	25	13	12	14	4	3	2	1	100
8. Exec. & Mgmt.	24	25	10	8	26	3	2	1	1	100
9. Other	29	16	10	10	19	1	15	0	0	100
FIRM TYPE										
1. Manf. Const. & Whol.	31	27	16	11	7	3	1	3	1	100
2. Retail	29	26	14	12	8	6	4	1	0	100
3. Service	25	25	13	10	15	5	4	2	1	100
FIRM SIZE										
1. 1 - 19 Empl.	23	21	15	10	18	5	6	2	1	100
2. 20 - 99	26	26	15	10	12	4	4	2	1	100
3. 100 - 299	29	29	11	11	9	4	3	3	1	100
4. 300 - 499	26	26	15	11	12	6	2	1	1	100
5. 500+	32	28	15	12	5	3	1	3	1	100
WORK ZONES										
18. Downtown Hamilton	23	23	14	8	19	4	5	3	1	100
20. Bayfront Hamilton	32	28	16	12	5	2	1	3	1	100

- Other relatively important reasons are that "driving is the only available mode" (15%); that drivers "needed car for personal business" (11%) or "needed car for work-related trips" (10%).

- Major variations exist between employees of different occupational categories, indicating that the use of the personal car for work-related trips is relatively more important to employees in executive, managerial, and sales occupations.

- Driving to work because it is the only available means of transportation is a relatively more important reason for employees in construction, transportation and production occupations.

- Use of the personal auto for work-related trips is a relatively more important factor for employees in service firms and small firms.

- Employees working in Downtown Hamilton make more work-related trips than average, while employees working in the Bayfront find driving particularly faster and more convenient than transit.

4.2.2 Transit Mode Choice Reasons

Employees who take transit to work provided information on the reasons why they use this mode. Table 4.5 summarizes the percentage distribution of major reasons for transit use, by geographic area of the Region. The reasons were grouped into two major categories, depending on whether transit use was selected for its own positive features, or simply because of the lack of alternative modes.

The major observations which can be made concerning the reasons for transit use are as follows:

- For the overall Region, 75% of transit users are unable to drive to work, due to the lack of a vehicle and/or a drivers licence.

- The remaining 25% of transit users select transit over other modes because it is convenient and/or less expensive than using a car (with convenience being cited slightly more frequently than cost).

- For employees working in Downtown Hamilton a higher percentage of transit users select transit for reasons of convenience and/or cost (38%).

- Employees working in the Bayfront and central Hamilton include approximately 25% who select transit due to its convenience and/or cost, the same percent as the Regional average.

- Other employment areas have a relatively higher percentage of employees (up to 90%) who use transit because they have no alternative means of travel.

TABLE 4.5

TRANSIT MODE CHOICE REASONS

(% OF EMPLOYEES)

	Transit Convenient	Transit Less Expensive	BOTH Convenient and Less Expensive	SUBTOTAL Convenient and/or Less Expensive	SUBTOTAL No Auto and/or No Licence	Total
REGIONAL AVERAGE	10%	6%	9%	25%	75%	100%
WORK ZONE						
7. Urban Dundas	8	4	0	12	86	100
8. Urban Ancaster	50	0	0	50*	50*	100
10. West Glanbrook	0	0	0	0	100	100
14. South-East Stoney Creek	0	0	0	0	100	100
18. Downtown	14	10	14	38	62	100
20. Bayfront	8	7	10	25	75	100
21. Central Hamilton	9	6	12	27	73	100
22. East-Central Hamilton	6	1	7	14	86	100
25. North-West Hamilton Mtn.	7	3	7	17	83	100
26. North-Central Hamilton Mtn.	4	8	6	18	82	100
30. South-East Hamilton Mtn.	10	0	0	10	90	100

In addition to the reasons for mode choice specifically mentioned by drivers and transit users, information on a number of other personal and travel characteristics was obtained and tabulated against choice of mode. These characteristics include sex of employees, vehicle availability, walk time to transit services, and trip length. The purpose of this analysis is to illustrate the characteristics of drivers and transit users, and differences between them.

4.2.3 Mode Choice By Sex of Employee

Traditionally, males and females have had different travel characteristics, particularly in terms of transit use. Table 4.6 illustrates the variation in the use of transit modes by male and female employees.

The major observations noted are:

- Approximately 70% of all auto drivers are male.
- Approximately 60% of all auto passengers are female.
- Transit users are 36% male and 62% female.
- Users of inter-city transit carriers differ significantly from urban transit users. In particular, GO Transit users include 58% male and 37% female employees.
- Male employees are predominately auto drivers (81%), with only 8% using transit, 6% auto passengers, and 5% using other modes.
- Female employees include 52% auto drivers, and relatively high proportions of other mode users, including 21% using transit, 17% auto passengers, and 10% using other modes.

4.2.4 Mode Choice by Vehicle Availability

Employees were asked to indicate the total number of vehicles available to members of their households. Information about owned and leased vehicles was obtained separately, and then combined for this analysis.

Table 4.7 compares car ownership and employee's travel mode. The average number of vehicles available is also indicated, for each mode choice category.

TABLE 4.6

MODE CHOICE BY SEX OF EMPLOYEE

1) PERCENT MALE & FEMALE EMPLOYEES BY MODE

MODE CHOICE	EMPLOYEE SEX MALE	FEMALE	NOT STATED	TOTAL
1. Auto Driver	71%	27%	2%	100%
2. Auto Passenger	38	60	2	100
3. Total Transit	36	62	2	100
a) HSR	35	63	2	100
b) GO Transit	58	37	5	100
c) Canada Coach	18	67	15	100
4. Other Modes	45	54	1	100
TOTAL All Modes	61%	37%	2%	100%

2) PERCENT USE OF MODES BY MALE & FEMALE EMPLOYEES

MODE CHOICE	EMPLOYEE SEX MALE	FEMALE	TOTAL
1. Auto Driver	81%	52%	70%
2. Auto Passenger	6	17	10
3. Total Transit	8	21	13
4. Other	5	10	7
TOTAL All Modes	100%	100%	100%

TABLE 4.7

MODE CHOICE BY VEHICLE AVAILABILITY

(% OF EMPLOYEES)

MODE CHOICE	VEHICLES AVAILABLE 0	1	2	3+	TOTAL	AVE. NO. VEHICLES
1. Auto Driver	1%	42%	44%	13%	100%	1.7
2. Auto Passenger	11	57	26	6	100	1.3
3. Total Transit	32	46	19	3	100	0.9
a) HSR	32	46	19	3	100	0.9
b) GO Transit	52	27	18	3	100	0.7
c) Canada Coach	9	47	42	2	100	1.4
4. Other	25	53	16	6	100	1.0
TOTAL REGIONAL AVE.	8%	45%	37%	10%	100%	1.5

A review of this data provides the following major observations:

- The average employee in the Region has 1.5 vehicles available to members of their household. This includes 8% of employees with no vehicles, 45% with 1 vehicle, 37% with 2 vehicles, and 10% with 3 or more vehicles.
- Employees who drive to work have a higher than average 1.7 vehicles available. Most employees who drive (57%) have 2 or more vehicles.
- Employees who travel to work as auto passengers have a lower than average 1.3 vehicles available. Most of these employees (57%) have only 1 vehicle.
- Transit users have an average of only 0.9 vehicles available for household use. Many such employees (32%) have no vehicles available, while 46% have 1 vehicle.
- HSR transit users have the same vehicle ownership characteristics as overall transit users. GO Transit users have a lower vehicle availability, while Canada Coach users have a considerably higher number of vehicles.
- Employees using other modes have similar characteristics to those of overall transit users.

4.2.5 Mode Choice By Walk Time to Transit Service

Employees were questioned as to their perception of the length of time required to walk from their home to the nearest transit service they could take to work. This information can be used to determine how the availability and accessibility of transit service influences travel mode choice.

Table 4.8 provides a summary of the walk time (in minutes) from home, to transit service, by mode choice category. The percentage of employees who fall into each of 5 categories of walk time are indicated for the overall survey and for users of each mode. The average walk time to transit service is also provided for each mode.

The key observations which can be made concerning this aspect of travel characteristics are as follows:

- On average, 57% of employees in the Region live within a 5 minute walk of a suitable transit service, and 76% live within a 15 minute walk. The average walk time is 14 minutes.

TABLE 4.8

MODE CHOICE BY WALK TIME TO TRANSIT SERVICE

(% OF EMPLOYEES)

MODE CHOICE	WALK TIME (MIN.) 1-5	6-15	16-30	31-60	61+	NON RESP	TOTAL	AVE. WALK TIME (MIN)
1. Auto Driver	52%	20%	6%	4%	9%	9%	100%	18
2. Auto Passenger	66	18	6	2	3	5	100	10
3. Total Transit	73	24	1	0	0	2	100	4
a) HSR	76	21	1	0	0	2	100	4
b) GO Transit	34	61	4	0	0	1	100	9
c) Canada Coach	44	24	21	3	0	8	100	10
4. Other	79	10	1	0	1	9	100	4
TOTAL-REGIONAL AVE.	57%	19%	5%	3%	7%	9%	100%	14

- Employees who drive to work have an average walk time to transit service of 18 minutes. Drivers include a lower than average proportion having short walk trips (only 52% within a 5 minute walk).

- Auto passengers have a shorter than average walk time, averaging 10 minutes. 66% live within a 5 minute walk.

- Total transit users have the shortest average walk times to transit service, of 4 minutes. Most employees who use transit (73%) live within a five minute walk and almost all live within a 15 minute walk.

- Users of the two inter-city transit carriers, GO Transit and Canada Coach have somewhat longer average walk times, of 9 and 10 minutes, respectively.

- Users of other modes (most of whom walk to work) have an average walk time to transit of 4 minutes, with an even greater proportion of short walk times than for transit users (79% with a 5 minute walk).

4.2.6 Mode Choice by Trip Length

Information was obtained on trip length, or the time required by employees to reach their place of work. It has been cross-tabulated against mode choice, to determine the manner in which trip length relates to mode choice.

Table 4.9 indicates the percentage of employees within each trip length categories (by 10 and 15 minute intervals). The values are provided for the overall region, and by travel mode categories. Average trip lengths for each mode are also shown.

This trip length information shows the following characteristics:

- Auto drivers travel for an average of 22 minutes, with 69% travelling for between 11 and 30 minutes.

- Auto passengers have a shorter than average trip length of 18 minutes, with 72% travelling for between 1 and 20 minutes.

- Total transit users have the longest trip length, at 35 minutes. Canada Coach and GO Transit users have even longer trip lengths than overall transit users or HSR users (45 minutes for Canada Coach).

- Users of other modes (particularly walk) have very short trip lengths averaging 12 minutes, with a majority of trips under 10 minutes in length.

TABLE 4.9

MODE CHOICE BY TRIP LENGTH

(% OF EMPLOYEES)

MODE CHOICE	TRIP LENGTH (Minutes) 1-10	11-20	21-30	31-45	46-60	61+	TOTAL	AVE. TRIP LENGTH (min)
1. Auto Driver	16%	41%	28%	11%	3%	1%	100%	22
2. Auto Passenger	26	46	17	7	3	1	100	18
3. Total Transit	5	19	29	29	14	4	100	35
a) HSR	5	20	29	28	15	3	100	34
b) GO Transit	2	13	45	26	4	10	100	38
c) Canada Coach	5	11	23	39	1	21	100	45
4. Other	64	24	8	3	1	0	100	12
TOTAL REGIONAL AVE.	19%	37%	26%	13%	4%	1%	100%	23

4.2.7 Type of Parking Facility Used

Employees who drive to work were requested to provide information on the type of parking facility they use, including its location and cost.

Table 4.10 indicates the percentage of auto driver employees who use each of 4 types of parking facilities. These categories include free on-street parking; metered on-street parking; free parking in a lot or garage; and paid parking in a lot or garage. The distribution by parking type is provided for the overall Region, and by categories of occupation, from type and firm size.

The major observations related to parking type are:

- For the Region as a whole, 78% of employees use free lot or garage parking, while the remainder use paid lot (13%) or free on-street (9%) parking. Very few employees use metered street parking (0.2%).
- Free lot parking is used relatively more extensively by employees in production and transportation occupations, manufacturing and retail firms, and medium size firms.

TABLE 4.10

TYPE OF PARKING FACILITY USED

(% OF EMPLOYEES)

	FREE ON-STREET	METER ON-STREET	LOT/ GARAGE FREE	LOT/ GARAGE PAID	TOTAL
REGIONAL AVERAGE	9%	0%	78%	13%	100%
OCCUPATION					
1. Clerical & Office	16	1	68	15	100
2. Sales	7	1	80	12	100
3. Service	13	0	75	12	100
4. Construction	19	0	78	3	100
5. Production	6	0	90	4	100
6. Transportation	7	0	90	3	100
7. Professional	8	0	66	26	100
8. Executive & Managerial	2	0	80	18	100
FIRM TYPE					
1. Manf. Constr. & Wh.	4	0	90	6	100
2. Retail	7	0	86	7	100
3. Service	16	0	54	25	100
FIRM SIZE					
1. 1 - 19 employees	19	0	66	15	100
2. 20 - 99	10	0	78	12	100
3. 100 - 299	7	0	83	10	100
4. 300 - 499	6	0	87	7	100
5. 500+	5	0	81	14	100

- o Paid lot parking is used mainly by employees in professional and executive occupations, service firms and small firms.
- o Free on-street parking, is used mainly by employees in construction, clerical and service occupations, service firms and small firms.
- o Metered on-street parking is used to a very limited extent by employees in clerical, office and sales occupations.

4.2.8 Summary of Factors Related to Mode Choice

To summarize some of the foregoing observations, it may be noted that cost is not the most important factor in determining mode of travel. Personal automobile use continues to be the prevalent mode used for work travel in the Region despite the fact that fuel prices have increased significantly over the past few years.

Approximately half of the automobile drivers are captive auto users who either need their cars for work or have no other means available. It can be assumed that changes in transit service or marketing will not significantly attract these employees to transit use.

Of the auto drivers who are not captive, approximately half stated travel time and half stated convenience as being their reason for driving rather than using transit. This suggests that efforts to increase transit use for work trips must concentrate on providing faster and more direct transit service between places of employment and the major residential areas in which employees live.

Even with transit improvements, not all auto drivers can be attracted to transit. For example, in downtown Hamilton, which is served by extensive transit service, almost half of the auto drivers continue to select this mode because it is faster or more convenient than transit.

In the Bayfront Industrial area, there is a higher percentage of auto drivers who chose auto use because it is faster or more convenient. This suggests that there is a potential for increasing transit use by increasing direct service to this area.

The major difference in average travel time between auto drivers and transit users suggests that new types of transit service such as express buses would have to be introduced to attract employees who presently drive autos and for whom travel time is a major consideration.

Any effort to attract auto drivers to transit use must focus on a long-term strategy to change basic attitudes to travel. The availability of a vehicle for work travel has a major influence on the rate of transit use, as shown by the higher household auto ownership for auto drivers as compared to transit users. This reflects a long-term investment and commitment to auto use. With a second or third family car available for work travel, employees will not be likely to respond immediately to changes in transit service. Strategies to attract choice transit riders must be in place long enough to influence car ownership patterns.

Another major factor which encourages auto use appears to be the availability of parking. Most employees who drive to work utilize free parking, especially in work areas such as the Bayfront where land is readily available for parking. Any changes in the availability or cost of parking would be expected to influence the use of driving and transit modes. Conversely, any strategy to increase transit usage must also address the availability and cost of parking.

4.3 TRAVEL PATTERNS

In addition to the information on basic travel characteristics discussed in the preceeding section, the Employee Travel Survey provides information on travel patterns. These travel patterns are expressed as origin-destination (O-D) patterns, representing flows of people between geographic areas. That is, the work trips made by individual employees between their work locations and home locations are summed, to produce overall travel patterns. These travel patterns are important input into the process of planning transportation facilities and transit services.

Origin-destination information from the Employee Travel Survey is available for the eleven work zones which were surveyed. Data was analyzed to determine the distribution of home areas associated with employees in each of these employment or work areas. The following sections summarize the results of this origin-destination analysis, in terms of:

- Total person travel patterns (all road and transit users, on a daily or 24 hour basis)
- Transit person travel patterns (daily transit users)
- Modal split patterns (transit use rates, or the percent which transit users comprise of total persons)

Appendix D contains origin-destination tables showing the actual number of trips between categories of zones for total trips, transit trips, and modal split rates.

4.3.1 Total Person Travel Patterns

Surveyed employees provided information on both their home location and work location. These two items were cross tabulated to provide origindestination tables for the eleven employment areas surveyed.

Total trip patterns are described in terms of the distribution of home locations associated with the major employment areas. The Hamilton Bayfront and Downtown Hamilton areas are discussed separately in the following sections.

Hamilton Bayfront

The employment area with the greatest number of employees in Hamilton-Wentworth is the Hamilton Bayfront Industrial area. The flow map in Exhibit 4.9 illustrates the relative distribution of home locations associated with employees who work in this area. The percentage of Bayfront employees living in each residential area is represented by the width of the arrows.

The origin-destination pattern for persons working in the Bayfront may be summarized as follows:

- Most Bayfront employees live in Hamilton (66%). The major associated residential areas within Hamilton are the Hamilton Mountain (29%) and east-central Hamilton (25%).

- An additional 19% of Bayfront employees live in the other area municipalities within Hamilton-Wentworth, with 8% living in Stoney Creek and the remainder distributed fairly evenly among the other four municipalities (2% - 3% each).

- 15% of Bayfront employees live outside Hamilton-Wentworth, with almost half of these living in Burlington (7%), 4% living in Niagara and the remainder in other areas.

Downtown Hamilton

Employees working in Downtown Hamilton have a distribution of home locations, similar to that for the Bayfront area, as indicated in Exhibit 4.10. The major characteristics of this origin-destination pattern may be summarized as follows:

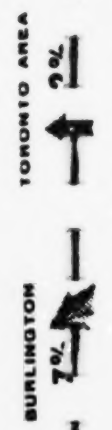
- Most Downtown employees live in Hamilton (63%), with the majority of these living on the Hamilton Mountain (28%), and in east-central Hamilton (15%). Other areas of significant concentration are Downtown Hamilton (10%) and west Hamilton (8%).

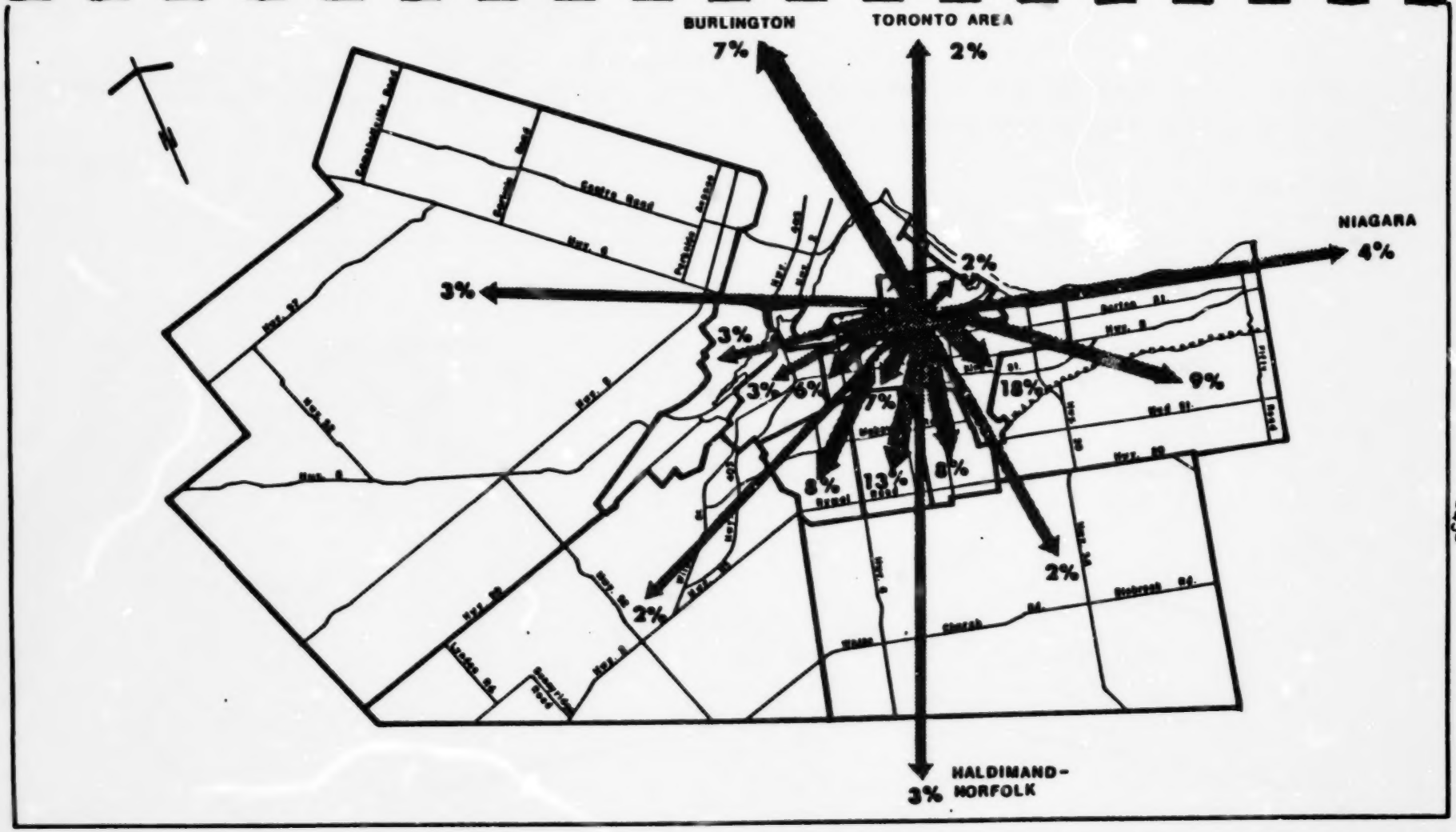
- 13% of Downtown employees live in other area municipalities within Hamilton-Wentworth, with approximately 3% living in each of Flamborough, Dundas, Ancaster, and Stoney Creek, and 1% in Glanbrook.

- 24% of Downtown employees live outside of Hamilton-Wentworth with half of these living in Burlington (12%) and many of the remainder living in Oakville and further east.

Other Employment Areas

Similar origin-destination information is available for the other employment areas surveyed. These include east-central Hamilton, zones on the Hamilton Mountain, and suburban zones in Ancaster, Dundas, Glanbrook and Stoney Creek. These areas contain fewer employees than work in the Bayfront and Downtown Hamilton, and thus contribute relatively fewer work trips to overall travel patterns.





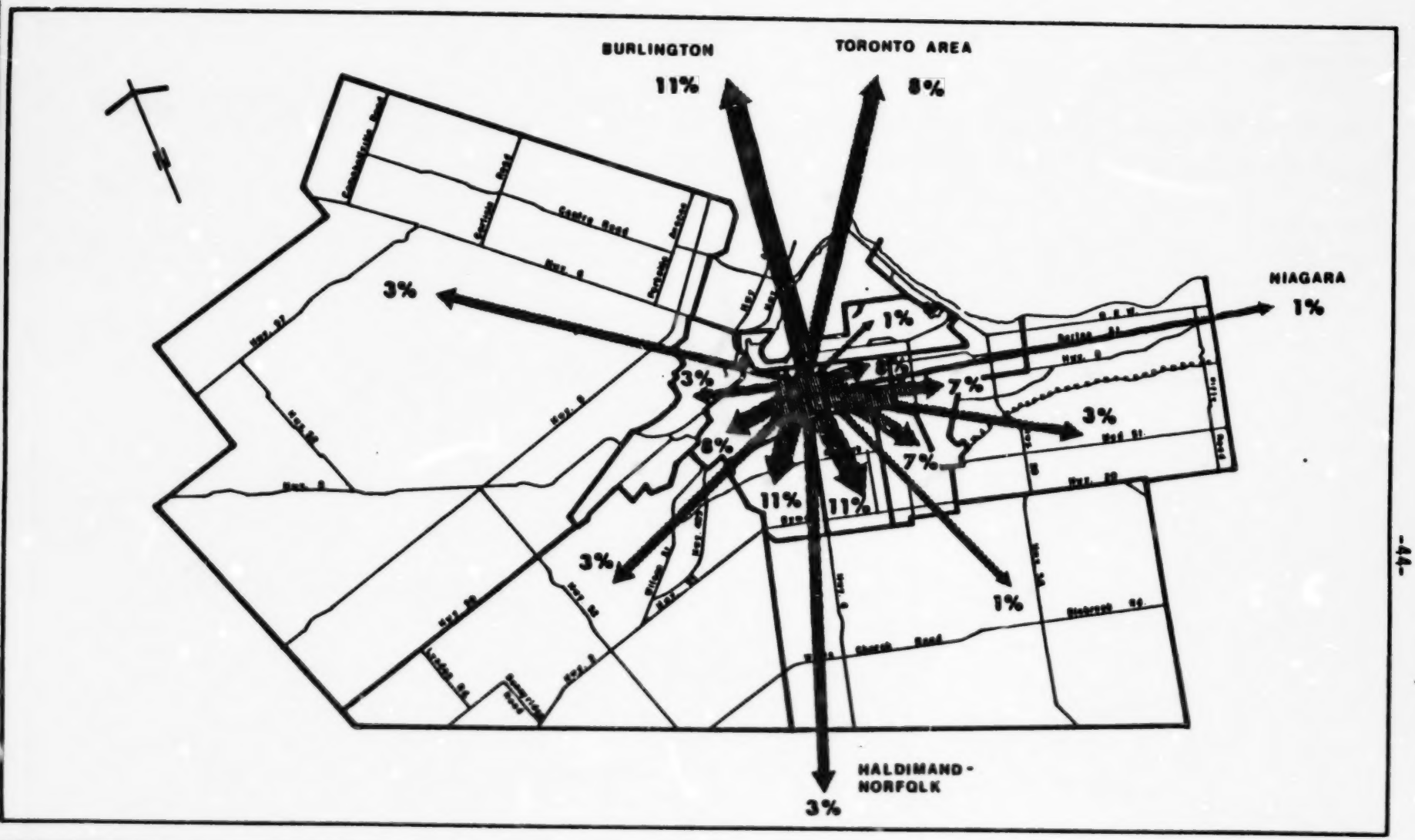
LEGEND

% OF TOTAL DOWNTOWN EMPLOYEES RESIDING IN THIS AREA.

Exhibit 4.9

TOTAL PERSON TRAVEL PATTERNS FOR HAMILTON BAYRONT EMPLOYEES (24 HR)

Planning and Development Department
Hamilton-Wentworth Region



LEGEND

→ % OF TOTAL DOWNTOWN EMPLOYEES RESIDING IN THIS AREA.

Exhibit 4.10

TOTAL PERSON TRAVEL PATTERNS FOR DOWNTOWN HAMILTON EMPLOYEES (24 HR)

A number of key points may be made concerning characteristics of work trip patterns to these areas:

- The majority of employees live within Hamilton, as is the case for Bayfront and Downtown employees.
- Within Hamilton, the Hamilton Mountain is an important residential area for most work areas.
- The degree of self containment for these other work areas is generally much higher than for the Bayfront and Downtown. For example, 57% of employees who work in surveyed areas on the Hamilton Mountain also reside on the Mountain and 41% of employees who work in the urban areas of Dundas and Ancaster also reside there. This compares with the 10% of Downtown Hamilton employees who live in the Downtown.

4.3.2 Transit Person Travel Patterns

This section summarizes information on the magnitude and orientation of existing transit travel patterns.

The information on transit travel patterns was obtained by producing cross-tabulations of employment location and home location (as was done for total persons), for only those respondents using transit. The results were summarized in the form of an origin-destination table showing the distribution of home locations for transit users working in the 11 surveyed employment areas. This table is provided in Appendix D.

The major characteristics of transit travel patterns are summarized briefly here:

- Downtown Hamilton is the employment area with the greatest number of employees who use transit. Almost all Downtown employees using transit live within Hamilton (86%), particularly on the Mountain (46%), and in east-central Hamilton (23%). Six percent (6%) live elsewhere in Hamilton-Wentworth and 8% live outside of Hamilton-Wentworth, mainly in the Burlington to Toronto area.
- Employees working in the Hamilton Bayfront area use transit to a lesser degree than employees working in the Downtown. These Bayfront employees who use transit live almost exclusively in Hamilton (95%), particularly on the Mountain (36%) and in east-central Hamilton (38%). Four percent (4%) of these transit users live elsewhere in Hamilton-Wentworth and 1% live outside the Region, mainly in Burlington.
- Employees who work in east and central Hamilton, and use transit for work travel, have a distribution of home locations similar to the Downtown and Bayfront with 93% living in Hamilton.

- Employees who work on the Hamilton Mountain and use transit, have slightly different O-D patterns, with 97% living in Hamilton, including 61% living on the Hamilton Mountain.

- Employees working in suburban zones outside Hamilton exhibit very low transit use.

4.3.3 Modal Split Patterns

A further type of analysis was undertaken to determine the relative significance of transit use to employment areas within Hamilton-Wentworth. Modal split may be defined as the percentage which transit users represent of total persons travelling. Modal split rates thus enable comparison of the relative rates of transit use between areas, rather than the absolute numbers of transit users.

Modal split rates were calculated using the origin-destination tabulations described earlier for total persons and transit persons. A third O-D table or interchange table was produced, containing the modal split values (transit persons as a percent of total persons) for each combination of work zone and home zone surveyed. This modal split table is provided in Appendix D and is summarized in Exhibit 4.11.

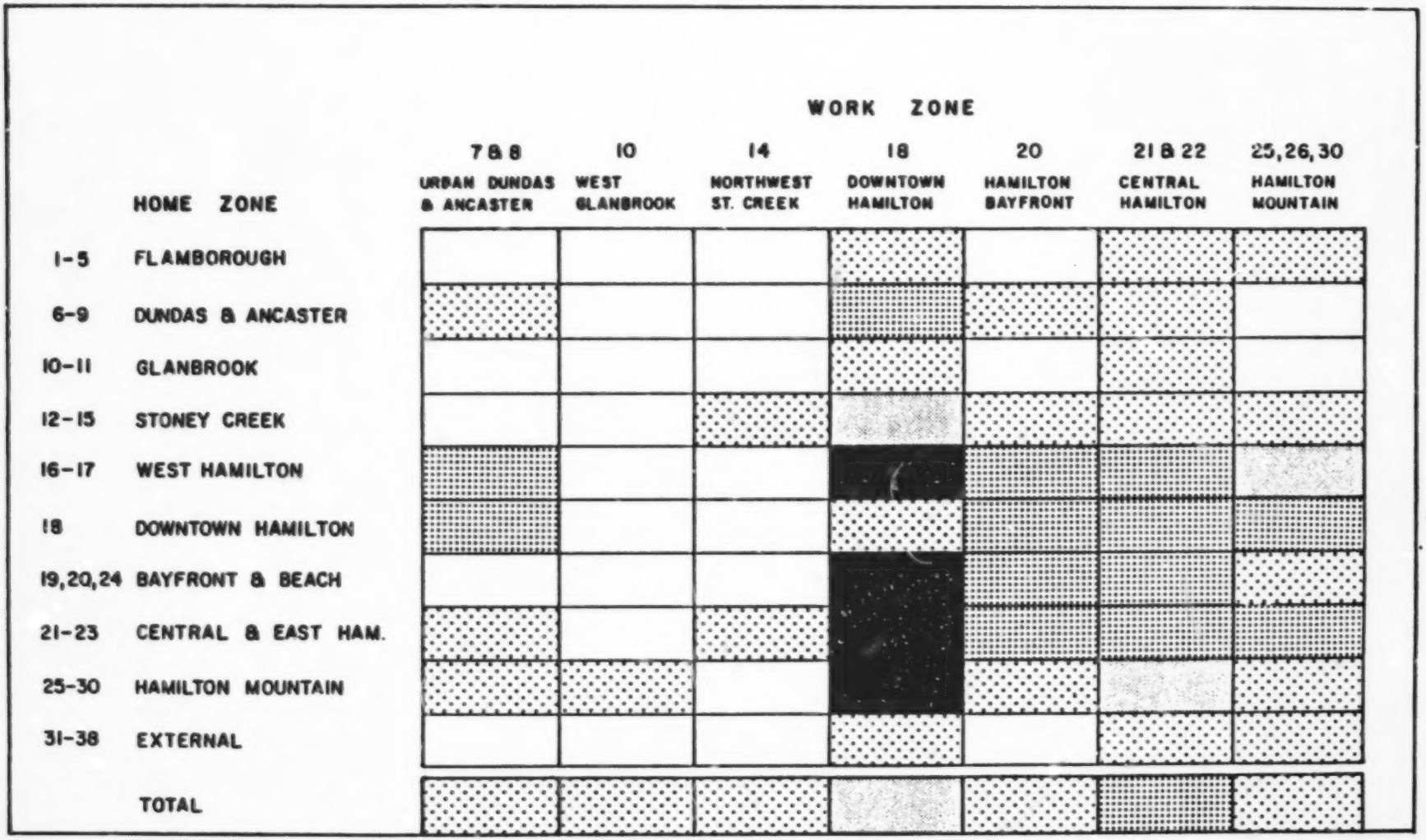
The matrix in Exhibit 4.11 illustrates modal split values for various groupings or categories of zones, including 7 categories of work zone and 10 categories of home zone. The values are shown symbolically within intervals of 10%, to enable easier comparison. Values are for total daily work travel over a 24 hour period.

The modal split patterns indicated by the survey results may be summarized as follows:

- Trips to work locations in Downtown Hamilton display the highest modal split rates. Over 40% of Downtown employees who live in central, east and north Hamilton, and on Hamilton Mountain, use transit for travel to work. Over 30% of Downtown employees who live in west Hamilton use transit, as do 11% to 30% of Downtown employees who live in suburban zones in Stoney Creek, Dundas and Ancaster. Downtown employees living elsewhere, such as the Downtown itself, rural areas and external areas, have minimal transit use of under 11%. On average, over 20% of Downtown employees use transit.

- Moderate modal split rates are indicated for trips to work in central Hamilton. The modal split values for work trips between central Hamilton and all other areas of Hamilton are over 10%, with the modal split slightly higher to Hamilton Mountain. A low rate of transit use occurs between central Hamilton and suburban or rural areas outside Hamilton.

- Trips to work location in Hamilton Bayfront or on the Hamilton Mountain are also associated with fairly low modal split rates of 11-20% from most areas of Hamilton. Transit use rates are zero or neglible to these zones from some suburban and rural zones.



LEGEND

MODAL SPLIT

- 0 %
- 1 - 10%
- 11 - 20%
- 21 - 30%
- 31 - 40%
- 41 - 50%

Exhibit 4.11

MODAL SPLIT VALUES FOR MAJOR WORK AND HOME ZONE CATEGORIES (24 HR.)

Planning and Development Department
Hamilton-Wentworth Region

- Very low modal split rates exist for trips between suburban work zones in Dundas, Ancaster and Stoney Creek, and the Downtown or central Hamilton zones. Otherwise, there is little transit use to these areas.

Conclusions - Travel Patterns

The following key observations summarize the travel patterns of employees:

- The Bayfront Industrial area attrracts the highest number of work trips made mostly by employee living within Hamilton, especially on Hamilton Mountain and in east Hamilton.
- Downtown Hamilton also attracts a high number of work trips having similar origin-destination patterns primarily from residential areas in Hamilton.
- Work trips from residential areas external to Hamilton-Wentworth account for approximately 16% of all work trips, and 24% of trips to Downtown Hamilton. Trips from Burlington account for approximately half of all external trips.
- The rate of transit use for work trips varies widely throughout Hamilton-Wentworth. Transit use is relatively high to Downtown Hamilton; moderate to other urban areas in Hamilton including the Bayfront; and transit use is very low or negligible to suburban and rural areas.

4.4 COMMENTS AND SUGGESTIONS

Employees completing the travel survey were asked to provide any general comments and suggestions they might have for improving transportation in Hamilton-Wentworth. A significant number of employees responded with a variety of thoughtful and constructive suggestions. Of all employees surveyed, 17% provided comments and suggestions, which have been summarized into 5 categories. The percentage of employees who provided each type of comment is shown in Table 4.11 for the overall Region and for each work macro zone.

The distribution of comments may be described as follows:

- Optimization of the existing HSR services was suggested by 41% of employees making comments. This includes suggestions for faster travel times and provision of conveniences such as more bus shelters.
- Expansion of HSR services to outlying areas was suggested by 13% of these employees. Areas of the Hamilton Mountain, Dundas, Stoney Creek and Glanbrook (expecially Hamilton Airport at Mount Hope) are perceived to be under-served by transit.

COMMENTS AND SUGGESTIONS

(% OF EMPLOYEES)

	Optimize Existing HSR Transit Service	Extend HSR Transit Service	Roadway System Improvements	Express Transit Service	Inter-City Transit Service	Other	Total
REGIONAL AVERAGE	41%	13%	12%	11%	5%	18%	100%
WORK ZONE							
7. Urban Dundas	32	52	4	4	4	4	100
8. Urban Ancaster	0	0	0	0	0	0	0
10. West Glanbrook	0	67	33	0	0	0	100
14. South-East Stoney Creek	23	35	16	7	17	2	100
18. Downtown Hamilton	48	16	7	9	6	14	100
20. Bayfront Hamilton	32	9	16	17	4	22	100
21. Central Hamilton	44	11	11	5	5	24	100
22. East-Central Hamilton	65	7	9	2	5	12	100
25. North-Central Hamilton Mtn.	39	20	9	7	7	18	100
26. North-Central Hamilton Mtn.	60	21	3	4	4	8	100
30. South-East Hamilton Mtn.	30	33	7	10	10	10	100

- Roadway system improvements were suggested by 12% of these employees. In particular, the need for greater accessibility to the Bayfront Industrial Area and Downtown Hamilton was emphasized. Suggested improvements included expansion of existing roadways, construction of new roadways, and traffic operation improvements dealing with traffic signal synchronization and railway traffic conflicts.

- Express transit service was suggested by 11% of employees. Those people working in the major employment areas, such as the Bayfront Industrial Area and Downtown Hamilton, are particularly interested in express service. The need to design such service to coincide with the work starting and finishing times of shift workers in the Bayfront was mentioned.

- Improved inter-city transit service was suggested by 5% of employees. Transit services to areas such as Burlington, Oakville and Niagara are felt to be in need of improvement.

Several other suggestions regarding transportation were made by employees. Some employees wish to carpool, but find it difficult to locate other people with similar travel patterns. Therefore, the creation of a central carpool matching agency was suggested. Other comments deal with bicycle use, including requests for appropriate routes and facilities.

Some variation exists in the types of comments made by employees working in different geographic areas. As shown in Table 4.11, the employees most concerned with improvements to existing transit services were those working in central Hamilton areas both above and below the Escarpment, including the Downtown. On the other hand, employees who suggested route extensions tended to work in peripheral areas in Dundas, Glanbrook and Stoney Creek as well as on Hamilton Mountain. Express bus service was primarily requested by employees working in the Bayfront or in Downtown Hamilton. Roadway system improvements were mainly related to the Bayfront and outlying areas.

The general comments and suggestions made by employees indicate that transportation system improvements should focus on transit facilities as much as, or more than, roadway facilities. This is implied by the fact that 70% of the comments made dealt with potential improvements in the transit system (including improving the efficiency of existing routes, extending routes, and providing express bus service). Only 12% of comments dealt specifically with roadway system improvements, while the remainder dealt with other issues such as car pooling or bicycling. Thus, there seems to be considerable potential for increasing transit use, by means of service improvements.

5.0 POLICY OPTIONS AND DIRECTIONS

The information on work trip patterns and travel characteristics derived from the Employee Travel Survey can be used as the basis for assessing policies on the provision of transportation services, the expansion of transportation systems or land use controls relating to transportation. Hamilton-Wentworth has existing policies contained in its Official Plan and policies of Council that address transportation related issues including:

- The provision of Regional transit service
- The orientation of transit routes
- The provision of inter-regional transit connections
- The use of express transit service
- The construction of exclusive transit lanes
- The provision of parking areas
- The expansion of the Regional road system

Recent studies in Hamilton-Wentworth and elsewhere, and literature on transportation related matters suggest other policy areas that should be investigated in terms of employee travel behaviour. These areas of potential policy include:

- The alteration of the work week or work day in order to modify peak demands; and
- The introduction of ridesharing programs such as car or van pooling to reduce the number of vehicles on the road system.

The following policy review is related to work travel demands as measured by the Employee Travel Survey. A number of the policy areas are affected by other trip purposes and must be assessed further in terms of total travel demand. The purpose here is to assess the potential for implementation of new or broadened policy initiatives. Decisions to take specific actions to implement policies must be based on more detailed assessment of the feasibility and the cost-effectiveness of those specific actions.

The following sections deal with each relevant policy option in terms of: its purpose; criteria for determining its suitability; present Regional policies and an assessment of its potential effectiveness in relation to the findings of the Employee Travel Survey.

5.1 TRANSIT COVERAGE

Existing Policies

The extent of local transit coverage within Hamilton-Wentworth is dependent on whether an area is inside or outside the Urban Transit Service Area (U.T.S.A.). Inside the U.T.S.A., coverage is designed to provide service to the urban area with the objective of having all development within a 15 minute walking distance of a transit route. Outside the U.T.S.A., the level of transit service is determined by the Area Municipality based on cost effectiveness. In terms of servicing all work trips equally well, it is desirable to have similar criteria for transit coverage within the entire urbanized area and within areas serving similar functions in terms of commuters.

Data Review

A review of the Employee Travel Survey results indicates:

- A significant number of the employees in downtown Hamilton and the Bayfront Industrial Area commute from area municipalities outside of Hamilton (up to 20%).

- A significantly lower proportion of employees commuting from the other area municipalities use transit than do those coming from Hamilton. Captive transit riders dominate the users from outside Hamilton.

- The decision to use transit is strongly influenced by the length of time required to walk to transit services. Less that one percent of transit users are willing to walk more than 15 minutes.

- Convenience is an important criteria which people use in selecting their mode of travel.

Conclusions

On the basis of this analysis of existing policies and employee travel characteristics, it is possible to recommend the following:

If transit is to be promoted as a viable alternative mode of travel to major employment areas, then the Urban Transit Services Area should be reviewed on the basis of work trip commuter patterns within the urban area.

5.2 TRANSIT ORIENTATION

Existing Policies

The present transit service is oriented toward Downtown Hamilton with over 90% of the bus routes passing through or terminating in the Downtown. There are three transit routes oriented directly to the Bayfront area for peak hour service of which two provide only peak hour service.

The Hamilton-Wentworth Official Plan calls for two sub-regional centres to serve as focal points for transit service. These include one in the vicinity of Limeridge Mall on the Hamilton Mountain, and one in the vicinity of Eastgate Square in Stoney Creek.

It is desirable to orient transit service to areas of major employment or activity (i.e. shopping centres) centres that attract a consistently high number of trips.

Data Review

The Employee Travel Survey indicates that:

- There are two major employment areas in Hamilton-Wentworth, namely, the Downtown and Bayfront;
- Transit usage is relatively high to Downtown Hamilton were transit services are concentrated; and
- Transit usage is considerably lower to the Bayfront Area, where transit service is mainly indirect.

Conclusions

There is a potential to increase transit usage to the Bayfront with direct transit service between this area and the major places of residence of employees (namely the Hamilton Mountain and east Hamilton and Stoney Creek). The service would have to be unique with trip times concentrated around shift changes, as there are very few trips for other than work purposes into the area.

Implementation of such additional transit services would have to be staged over time to allow a change in personal travel characteristics. Such services must also be coordinated with other policies regarding ridersharing programs and parking.

5.3 INTERCITY TRANSIT SERVICES

Existing Policies

Intercity transit services are provided primarily by Canada Coach Lines and GO Transit. These services connect Hamilton-Wentworth with points such as Burlington, Oakville, Toronto, Guelph, Kitchener, Brantford, Haldimand Norfolk and Niagara.

The related Official Plan policies are designed to encourage commuter transit connections to Downtown Hamilton and to encourage the province to expand inter-regional transit connections between Hamilton and Burlington and points east in order to serve commuter travel into Hamilton.

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Inter-regional transit services serve three functions: to provide strategic links between urban areas for all trip purposes; to provide transit accessibility to the rural areas of Hamilton-Wentworth; and to accommodate commuter work trips into and out of the Region. Employee Travel Survey results can only be used to evaluate the commuter role of inter-regional transit.

Survey Results

The survey results indicate that:

- Approximately 17% of the persons employed within Hamilton-Wentworth Region reside outside the Region.
- A significant proportion (24%) of employees in Downtown Hamilton reside outside Hamilton-Wentworth, with 17% residing in Burlington.
- 15% of Bayfront employees reside outside Hamilton-Wentworth, with 7% residing in Burlington.
- Inter-regional transit use for commuting to employment areas other than Downtown Hamilton including the Bayfront is insignificant.

Conclusions

The size of the work force commuting between Burlington and Downtown Hamilton suggests a larger potential demand than indicated by the present use of transit services. The market share or rate of transit use could be increased by improvements such as the proposed GO ALRT line to Hamilton.

The size of the work force commuting between Burlington and the Bayfront Industrial area suggests a high potential for direct inter-regional transit connections between these areas. This service should be designed to match the work start times of shift workers. Its implementation should be staged and coordinated with other policy measures.

5.4 EXPRESS TRANSIT AND TRANSIT WAYS

Existing Policies

At present, the H.S.R. provides no express service except for the semi-express service between Downtown Hamilton and Dundas. There are no exclusive bus ways except for the south leg of King Street in the vicinity of Gore Park which is currently being implemented. The Hamilton-Wentworth Official Plan calls for preferential or exclusive bus lanes on arterial roads where demand warrants and application is feasible.

Express bus service should be considered between areas of high actual or potential demand. Transit ways or exclusive transit lanes should be considered only where there is a high concentration of transit service, and where road congestion has a significant impact on the speed of transit service.

Survey Results

- o There is a high concentration of transit service into Downtown Hamilton;
- o The majority of transit users to both the Downtown and the Bayfront are captive riders; and
- o The reasons for selection of mode indicate that the only way to attract a higher percentage of or discretionary transit riders is to provide more convenient and faster transit service.

Conclusions

Significant numbers of potential transit riders could be attracted by express transit routes from the Downtown to the southern mountain, Stoney Creek, Dundas and Ancaster. Potential transit riders could be attracted to express transit routes from the Bayfront Industrial area to the southern Hamilton Mountain and Stoney Creek.

The feasibility of exclusive transit lanes or transit ways could be considered in the corridors leading to Downtown Hamilton from the west and east (King and Main Streets), and from the south (James and John Streets).

5.5 FLEXIBLE WORK HOURS

Existing Policies and Applications

Flexible or staggered work hours involve policies established by employers that allow employees to vary their work starting times and/or the number of hours or days they work during a week. The objective is to spread the work start and finish time of employees over a longer period of time and thus reduce peak hour travel demands and resulting traffic congestion.

Currently, all employers in Downtown Hamilton with over 500 employees have some form of either flexible or staggered work hour policies. In the Bayfront area, although there are few companies with actual flexible hour policies, over 90% of employees work at companies that have shift operations. The Region has no specific policies on the promotion of flexible work hours although the Region does provide a flexible work hour program for its own employees.

Criteria

Flexible work hours are most effective in office environments of relatively large firms, where the job functions of employees are largely independent. Flexible hours are much less suited to large manufacturing plants where the jobs are more inter-dependent and the plants operate on a continuous shift basis.

The Employee Travel Survey results indicate that:

- Work travel to downtown Hamilton is very sharply peaked in the morning and evening, which suggests that the option for flexible hours offered by the large companies is probably not being taken full advantage of by the employees. It is estimated that peak hour traffic into the downtown could be reduced by approximately 5% if available flexible hours programs were fully utilized.

- Work travel to the Bayfront is less sharply peaked, although the vast majority of employees travel to work in the 7:00 to 8:00 a.m. and 3:00 to 4:00 p.m. peak hours. A large percentage of those employees are involved in shift operations and are therefore not able to participate in flexible work hour programs.

- There are some office employees of manufacturing firms in the Bayfront area that could participate in flexible hour programs. The estimated impact would be limited to approximately a 1% reduction in peak hour traffic.

- There is a limited potential for reduced peak hour traffic from the promotion of flexible hours in other employment areas of the Region.

Conclusions

The Region should promote the continued use of flexible work hour programs by employers in the Downtown and should encourage employees to participate in programs made available by their employers. This would reduce congestion on the road system into the Downtown and spread the peak demand for transit services. Such a public promotion program was recently carried out by the TTC in Toronto.

5.6 RIDESHARING PROGRAMS

Existing Policies

Ridesharing refers to both car and van pooling. Car pooling involves two or more people sharing a private automobile for the trip to work. Van pooling involves the use of a van provided by the employer or another agency to be used by a number of employees (usually 8 to 12) for the trip to work.

The Hamilton-Wentworth Region has no specific policies regarding the promotion of ridersharing, although the Region has participated with the Province in the promotion of van pooling to area employers. There is currently one employer in the Region that is actively involved in a van pooling program and a number of other employers that are seriously considering such a program.

Criteria

Van pooling programs are most effective when implemented by larger employers (i.e. more than 500 employees). A successful program requires that there be concentrations of employees residing at one point or along a linear path in an area not well served by transit with longer than average trip lengths (in excess of 25 km).

Car pooling requires concentrations of employment opportunities and residential locations and a mechanism to enable potential participants to be matched up. Car pooling should not be promoted in areas well served by transit, as it could be in direct competion with transit use.

Both car and van pooling programs require that participants have similar working hours with little variation in start and finish times.

Survey Results

The results of the Employee Travel Survey indicate that:

- Downtown Hamilton and the Hamilton Bayfront are the major employment areas, where there are concentrations of employers with over 500 employees.

- Approximately 20% of employees who work in Downtown Hamilton live further than 25 km away. Over half of those reside in the Burlington area, which is serviced by transit connections to Downtown Hamilton.

- Downtown Hamilton is well serviced by transit with approximately 26% of employees using transit to get to work. Any promotion of car and van pooling in this area could have some negative impact on the rate of transit use.

- Approximately 15% of the employees in the Bayfront Industrial area live further than 25 km from work, with no direct transit connections to serve them.

- Car occupancy or the percent of auto passengers in the Bayfront area is lower than the Regional average.

Conclusions

There is a small potential to reduce traffic congestion into the Bayfront area through the promotion and implementation of car and van pooling programs to a majority of employers. Large industrial companies outside the Bayfront area could also benefit through the implementation of car and van pooling programs.

Promotion of car and van pooling programs must be closely coordinated with transit service improvements to ensure they do not compete. Any centralized car pool matching program would potentially compete with transit and should only be considered as an alternative to providing transit service.

5.7 BICYCLE PATH SYSTEMS

Existing Policies

There is currently one designated bicycle path in the Region, on Cootes Drive between McMaster University and Dundas. The Hamilton-Wentworth Official Plan states that the acquisition of rights-of-way and design of arterial roads should take into account the demands for bicycle use and allow for the construction of bicycle paths where warranted and feasible.

Criteria

Bicycle paths can be constructed either within existing road allowances, beside road allowances or on separate rights-of-way. Trips made by bicycle may be of a recreational nature, or for travel to work or school purposes and are relatively short in length.

The information from the Employee Travel Survey is used to analyze the potential of bicycle use for work trips only and does not address bicycle use for other purposes.

Survey Results

The results of the Employee Travel Survey indicate that:

- The average trip length for all employees is 23 minutes or approximately 10 km.
- Approximately 15% of employees have trip lengths under 3 km which is suggested as a reasonable maximum trip length for bicycle trips to work. Of these employees, approximately 6% walk to work and less than 0.5% use bicycles.
- The average work trip length to the Bayfront Industrial Area is slightly longer than the Regional average and there are fewer trips of under 3 km.
- The average work trip length to Downtown Hamilton is similar to the Regional average and there are many more shorter trips of under 3 km.

Conclusions

According to the survey information, a system of bicycle paths could not be justified on the basis of serving work trips only. However, any system of bicycle paths established to serve the demands for recreational and school travel should take into consideration potential travel to work by bicycle. If a system were to be established, connections should be provided specifically to the Downtown Hamilton area, the major shopping centres and institutions such as educational establishments.

ROAD SYSTEM IMPROVEMENTS

sting Policies

e Hamilton-Wentworth Region is responsible for the construction, er tion and maintenance of the arterial road system in the Region. It so provides input to the Province concerning the expansion of the ·ovincial road system in the vicinity of the Region. The am ton-Wentworth Official Plan contains policies outlining planned mprovements to the road systems including:

- Improvements to Burlington Street East;
- The construction of a new east-west roadway across the mountain connecting to a new north-south roadway in the vicinity of the Red Hill Creek Valley connecting to the QEW in the south;
- The construction of the Perimeter Industrial Road connecting Burlington Street west to Highway 403;
- Expansion of the QEW Skyway; and
- Extension of Highway 403 west to Brantford.

t the present time, the new Burlington Street East improvements are earing completion, the QEW improvements are under construction, and the plans for the East-West and North-South roadway have been submitted to the Ministry of the Environment for review.

Survey Results

The results of the Employee Travel Survey indicate that:

- A large proportion of the work force (12%) live in Burlington and areas further east and must commute either the QEW or Highway 403 corridors;
- Approximately 30% of employees in the Bayfront Industrial area live on the Hamilton Mountain and must commute across the Niagara Escarpment. These commuters would be well served by the proposed East-West and North-South Roadway. An additional 33% of employees live in eastern Hamilton and Stoney Creek and could also make use of the proposed facility;
- 24% of employees in Downtown Hamilton live outside of Hamilton-Wentworth and could make use of the proposed Perimeter Industrial Road to gain direct access to Highway 403. This road could also be used by the 20% of employees in the Bayfront area who live in central and west Hamilton, Dundas and Ancaster; and

- Based on the observed commuter patterns in industrial areas, the new industrial area on the Hamilton Mountain will need the high quality road access provided by the proposed East-West and North-South Roadway to accommodate work trips to the area, as well as material shipments in and out of the area.

Conclusions

The planned expansion of the road system including the specific improvements discussed, is compatable with the observed demand for work trips travel.

The data from the survey can be used as input to the assessment of other minor improvements to the road system.

5.9 FURTHER APPLICATIONS OF SURVEY DATA

The information obtained through the Employee Travel Survey will also be used to assess the impact of proposed changes in the transportation system and to better understand the potential changes in travel patterns as future development occurs. These further analyses will be achieved through refining the Region's travel forecast model to better simulate the travel characteristics of employees as measured by the survey. The updated model can then be used to assess potential changes in travel patterns in response to proposed changes in the road and transit systems and can assess those changes that will be necessary in the transportation systems to accommodate future development.

APPENDIX A

CELL DEFINITIONS

APPENDIX A

CELL DEFINITIONS

As described in Section 2.1, the survey sample involved the identification of subgroups or cells, based on all combinations of the following categories:

1. Firm Size - Number of employees in firm

Size Code		
	1.	1 - 19 employees
	2.	20 - 99 "
	3.	100 - 299 "
	4.	300 - 499 "
	5.	500+ "

2. Firm Type - Activity that firm is engaged in

Type Code		
	1.	Manufacturing, Construction & Wholesale
	2.	Retail
	3.	Service

3. Macro Zone - Geographic Zone

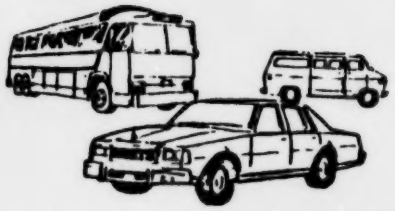
- see zone map, Exhibit 2.1
- for large firms, (20 or more employees), 11 macro zones sampled as illustrated in Exhibit 2.1
- for small firms, (19 or fewer employees), sample selected from all 30 macro zones

APPENDIX B

SURVEY QUESTIONNAIRE

COMMENTS AND SUGGESTIONS

Thank you for taking the time to fill out this form, it is greatly appreciated If you have any questions about the survey, please contact the Regional Planning and Development Department by telephoning 526 4156 during business hours



HAMILTON-WENTWORTH EMPLOYEE TRAVEL SURVEY

Each weekday thousands of people travel by private vehicle or transit to and from work in the Region of Hamilton-Wentworth This travel often results in the traffic congestion that delays our travel

In order to improve upon the transportation system in Hamilton Wentworth, we need to have up to date information on where people live and work, by what means they travel to work and why they choose that particular method of transportation

You and your fellow employees are being asked to help by answering the questions on this form It will take only a few minutes of your time For transportation planning purposes we need to know the address where your work trip starts, however, your name or signature are not required The information you give will be kept in confidence and will not be used by any agency or company other than the Regional Planning Department

If you would like to make any comments or suggestions for improving transportation in Hamilton-Wentworth, please use the space on the back of the form

Finally, we would like to thank you in advance for your co operation in this important survey

D A Lychak
Commissioner
Planning and Development

B-2

Q 1 Please give your home address (also of your trip to work normally starts). This information will be treated as confidential

STREET ADDRESS _____

CITY OR TOWN _____

PLEASE ANSWER QUESTIONS 2 TO 9 FOR YOUR LAST COMPLETE WORKDAY OR SHIFT

Q 2 When did you arrive at work on your last work day or shift?

ARRIVED AT _____ A.M./P.M. DAY _____

WHEN DID YOU LEAVE? _____ A.M./P.M.

Q 3 How long did it take to travel to and from work?

HOME TO WORK _____ MINUTES. WORK TO HOME _____ MINUTES

Q 4 How did you travel to and from work? Please check the appropriate means

If you used more than one means of travel, please number each in the order you took them

	HOME TO WORK	WORK TO HOME
DRIVER OF CAR, TRUCK OR VAN		
PASSENGER IN CAR, TRUCK OR VAN		
HSR BUS		
GO BUS		
CANADA COACH		
WALKED ALL THE WAY		
OTHER (Please describe)		

Q 5 If you drove a car or other vehicle to and from work, please indicate the major reasons. Please circle most appropriate NUMBERS

1 NEED CAR BECAUSE OF PHYSICAL DISABILITY OR HEALTH PROBLEM
2 DROPPED OFF SPOUSE OR CHILD AT WORK OR SCHOOL
3 NEEDED CAR TO TRANSPORT GOODS OR EQUIPMENT AS PART OF MY JOB
4 NEEDED CAR FOR TRIPS RELATED TO MY JOB DURING THE DAY
5 TRANSPORTED OTHER PEOPLE IN A CAR OR VAN POOL
6 NEEDED CAR FOR SHOPPING, OR PERSONAL BUSINESS TRIPS DURING, OR AFTER WORK
7 CAR IS THE ONLY AVAILABLE MEANS OF TRANSPORTATION BETWEEN MY HOME AND WORK
8 CAR IS MORE CONVENIENT, COMFORTABLE OR PRIVATE THAN TRANSIT
9 CAR IS FASTER THAN TRANSIT
10 OTHER (Please explain) _____

Q 6 How many vehicles (cars, trucks, vans) are available to the occupants of your household

_____ OWNED VEHICLES

_____ LEASED VEHICLES

Q 7 If you drove a car or other vehicle to work, where did you park? (Circle most appropriate NUMBER)

1 ON STREET (FREE)
2 ON STREET (METER)
3 IN PARKING LOT OR GARAGE (FREE)
4 IN PARKING LOT OR GARAGE (PAID)

Q 8 If you were a passenger in a vehicle or used transit for any part of your trip to work, please indicate the major reasons why. Please circle appropriate NUMBERS

1 DO NOT OWN A CAR
2 DO NOT HAVE A DRIVER'S LICENCE
3 OWN CAR BUT IT WAS NOT AVAILABLE
4 USE A CAR OR VAN POOL (SHARE COSTS WITH OTHER DRIVERS)
5 GET A FREE RIDE TO WORK
6 TRANSIT IS CONVENIENT TO HOME AND/OR WORK PLACE
7 TRANSIT IS LESS EXPENSIVE THAN CAR
8 OTHER (Please explain) _____

Q 9 Regardless of how you actually travel, how many minutes does it take to walk from your home to the nearest public transit service that you can take to work?

_____ MINUTES

TRAVEL IS INFLUENCED BY PERSONAL CHARACTERISTICS. THEREFORE, WE WOULD LIKE TO ASK YOU TWO QUESTIONS ABOUT YOURSELF TO GIVE US A BETTER UNDERSTANDING OF WORK TRAVEL

Q 10 Your sex (Please circle) 1 MALE 2 FEMALE

Q 11 Please indicate your occupation from the list of categories below. If you are not sure where to place your occupation, circle number 9 (OTHER) and give the title of your job and describe your job duties

1 CLERICAL AND GENERAL OFFICE WORK (Secretary, Bookkeeper, Teller, Mail Carrier)
2 SALES OCCUPATION (Sales of goods or services e.g. cars, insurance)
3 SERVICE OCCUPATION (Shoe Repair, Waiter, Police, Hairdresser, Maintenance Personnel)
4 CONSTRUCTION (Labourer, Foreman, Electrician)
5 PRODUCTION OCCUPATION (Steel Worker, Warehouseman, Assembly Line Worker, Machinist)
6 TRANSPORTATION (Bus/Truck Driver, Pilot, Train Crew)
7 PROFESSIONAL AND TECHNICAL (Engineer, Nurse, Teacher, Social Worker, Artist)
8 EXECUTIVE AND MANAGERIAL (Business Manager, Vice President, Personnel Manager)
9 OTHER (Please describe) _____

_____

APPENDIX C

EMPLOYEE DATA BANK

DETAILS OF CONTENTS AND

CODES

APPENDIX C

EMPLOYEE DATA BANK DETAILS OF CONTENTS & CODES

FIELD NO	CONTENTS AND CODES	COLUMN NO
1	Employer Number Macro zone number plus sequential number See Volume 1 report, Appendices A5 & A6	1-4
2	Employer Micro Zone - zone number from 1 to 135 (within Hamilton-Wentworth See attached micro zone map	5.8
3	Work Arrival Time - 24 hour clock - 1011 to 2459 (1:00 a.m. to 12.59 p.m.)	9-12
4	A.M. or P.M. for Work Arrival Time Code 1 - A.M. 2 - P.M.	13
5	Day of Week for Work Arrival Time Code 1 - Monday 2 - Tuesday 3 - Wednesday 4 - Thursday 5 - Friday 6 - Saturday 7 - Sunday	14
6	Work Departure Time - See Field 3	15-18
7	A.M. or P.M. for Work Departure Time - See Field 4	19
8	Trip Time to Work - travel time in minutes - 1 to 999	20-22
9	Trip Time From Work - See Field 8	23-25
10	Travel Mode to Work* (First Field) Code 1 - Driver of car, truck or van 2 - Passenger in car, truck or van 3 - HSR bus 4 - GO bus 5 - Canada Coach 6 - Walked all the way 7 - Other (description requested)	26

*Note: Multiple responses to this question were recorded in separate fields.

11 & 12	Travel Mode to work* (2nd and 3rd Fields) - See Field 10 for codes	27 & 28
13, 14 & 15	Travel Mode from Work* (1st, 2nd and 3rd Fields) - See Field 10 for codes	29, 30 & 31
16, 17 18 & 19	Reason for Driver Mode* (1st to 4th Fields) Code 1 - Needed car because of physical disability or health problem 2 - Dropped off spouse or child at work or school 3 - Needed car to transport goods or equipment as part of my job 4 - Needed car for trips related to my job during the day 5 - Transported other people in a car or van pool 6 - Needed car for shopping or personal business trips during or after work 7 - Car is the only available means of transportation between my home and work 8 - Car is more convenient, comfortable or private than transit 9 - Car is faster than transit 10 - Other (explanation requested)	32, 33 34 & 35
20	Number of Owned Vehicles - No vehicles (cars, trucks, vans) available Occupants of employees' household (0-9)	36
21	Number of Leased Vehicles - See Field 20	37
22	Type of Parking (used by drivers) Code 1 - On street (free) 2 - On street (meter) 3 - In parking lot or garage (free) 4 - In parking lot or garage (paid)	38
23, 24	Reason for Non-Driver Mode (1st to 3rd Fields) (for passengers in vehicles or transit users) Code 1 - Do not own a car 2 - Do not have a driver's licence 3 - Own car but it was not available 4 - Use a car or van pool (share costs with other drivers) 5 - Get a free ride to work 6 - Transit is convenient to home and/or work place 7 - Transit is less expensive than car 8 - Other (explanation requested)	39, 40 & 41

26	Walk Time to Transit Service - From home, to nearest public transit service available for travel to work (0-999 minutes)	42-44
27	Employee Sex Code 1 - Male 2 - Female	45
28	Occupation Code 1 - Clerical and general office work (secretary, bookkeeper, teller, mail carrier) 2 - Sales occupation (sales of goods or services e.g. cars, insurance) 3 - Service occupation (shoe repair, waiter, police, hairdresser, maintenance personnel) 4 - Construction (labourer, foreman, electrician) 5 - Production occupation (steel worker, warehouse man, assembly line worker, machinist) 6 - Transportation (buss/truck driver, pilot, train cres) 7 - Professional and technical (engineer, nurse, teacher, social worker, artist) 8 - Executive and managerial (business manager, vice president, personnel manager) 9 - Other (description requested)	46
29	Employer Size Code - number of employees in firm Code 1 - 1 - 19 employees 2 - 20 - 99 " 3 - 100 - 299 " 4 - 300 - 499 " 5 - 500 "	47
30	Employee Type Code - activity of firm Code 1 - Manufacturing, construction & wholesale 2 - Retail 3 - Service	48
31	Employer/Work Micro Zone - See Field 2	49-51
32	Employee/Home Macro Zone - Macro zone number (1-38), see attached map	52-53
33	Employer/Work Macro Zone - see Field 31	54-55
34	Travel Mode (special) Code 1 - Drive 2 - Non-drive 3 - Combination of drive & non-drive	56-57
35	Total Employees in Firm	58-62

36	Sampled Employees in Firm	63-67
37	Cell Number - 4 digit code, including Digit 1 & 2 - Work macro zone (from Field 31) 3 - Employer Size Code (from Field 29) 4 - Employer Size Code (from Field 30)	68-71
38	Total Employers in Cell	72-75
39	Sampled Employers in Cell	76-77
40	Firm Factor -Field 35 divided by Field 36	78-83
41	Cell Factor -Field 38 divided by Field 39	84-89
42	Occupational Distribution Factor -Adjustment factor to reflect correct percentage of employees by occupation category, by firm	90-95
43	Non-Sampled Cell Factor -Adjustment factor for total macro zones to reflect size/type combinations not sampled	96-101
44	Firm Factor X Cell Factor	102-107
45	Occupation Distribution Factor X Non-Sampled Cell Factor	108-113
46	Firm X Cell X Occupation Distribution X Non-Sampled Cell Factor -One decimal point included	114-119
47	P.M. Peak Period Flag -for work depart times between 4:30-5:30 p.m. plus employees en route during this time Code 0 - not a p.m. peak period trip 1 - p.m. peak period trip	120
48	Firm X Cell X Occupation Distribution X Non-Sampled Cell Factor -similar to Field 46, no decimal point included	121-126
49	Total Factor - Small Firms -for small firms only (Cell X Non-sampled Cell Factors)	127-132
50	Regional Factor -adjustment for macro zones not sampled	133-138
51	Total Factor - Large Firms -Field 46 X Regional Factor	139-144

APPENDIX D

ORIGIN – DESTINATION TABLES

1. TOTAL PERSONS (24 HOUR)

2. TRANSIT PERSONS (24 HOUR)

3. % MODAL SPLIT (24 HOUR)

1. TOTAL PERSONS (24 HOUR)

HOME ZONE		WORK ZONE						
Home Zone		7-8	10	14	18	20	21-22	25,26,30
Flamborough	1-5	742	4	12	1,143	1,727	1,728	238
Dundas & Anc.	6-9	1,436	43	54	2,153	3,059	2,350	1,441
Glanbrook	10-11	19	49	13	306	1,312	1,118	404
Stoney Creek	12-15	36	13	360	1,138	5,065	2,505	1,157
West Hamilton	16-17	234	2	19	2,823	3,315	1,655	1,350
Downtown	18	104	10	19	3,562	2,049	3,083	1,131
Bayfront	19,20,24	9	2	8	455	1,567	902	69
Cent. & E. Ham.	21.23	170	9	243	5,219	15,088	10,674	1,188
Mountain	25-30	311	41	105	9,969	17,398	12,891	11,178
External Zones	31-38	412	104	468	8,318	8,944	7,151	1,572
	TOTAL	3,473	277	1,301	35,086	59,524	44,057	19,728

2. TRANSIT PERSONS (24 HOUR)

Flamborough	1-5	0			14	3	11	9
Dundas & Anc.	6-9	12			229	38	63	4
Glanbrook	10-11				5	3	9	2
Stoney Creek	12-15			5	245	141	132	52
West Hamilton	16-17	27			965	390	245	312
Downtown	18	19			309	351	476	152
Bayfront	19,20,24				217	196	127	3
Cent. & E. Ham.	21-23	9		4	2,132	1,725	2,039	134
Mountain	25-30	13	2		4,249	1,635	2,712	1,142
External Zones	31-38				813	47	211	65
	TOTAL	80	2	9	9,178	4,529	6,026	1,878

3. 3% MODAL SPLIT (24 HOUR)

Flamborough	1-5							4
Dundas & Anc.	6-9	1			11	1	3	
Glanbrook	10-11				2		1	
Stoney Creek	12-15			1	21	3	5	4
West Hamilton	16-17				34	12	15	23
Downtown	18	11			9	17	15	13
Bayfront	19,20,24	18			48	12	14	4
Cent. & E. Ham.	21-23			2	41	11	19	11
Mountain	25-30	5			43	9	21	10
External Zones	31-38	4	5		10		3	4
	TOTAL	2	1	1	26	8	14	9